APPENDIX D

BIOLOGICAL ASSESSMENT / BIOLOGICAL EVALUATION

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Prepared for

FANNY Project Area

Environmental Assessment

BLACK HILLS NATIONAL FOREST
HELL CANYON RANGER DISTRICT

PREPARED BY _____ DATE _____
Wildlife Biologist

REVIEWED BY _____ DATE _____
Botanist

BIOLOGICAL ASSESSMENT / BIOLOGICAL EVALUATION

Fanny Project Area

I. INTRODUCTION AND SCOPE

This Biological Assessment/Biological Evaluation (BA/BE) is a review of vegetative treatment proposed for the Fanny Project Area Environmental Assessment. This BA/BE is to determine whether the proposed action may affect federally listed species or sensitive species listed by the Rocky Mountain Region (FSM 2670, R-2 ID 2600-94-2) and letter from the Regional Forester (memo dated June 14, 2000). This document is prepared in accordance with legal requirements set forth under Section 7 of the Endangered Species Act of 1973 (19 U.S.C. 1536 (c)), and follows standards established in Forest Service Manual direction (2672.42) and the Code of Federal Regulations (50 CFR S402). This document tiers directly to the revised Black Hills National Forest Land and Resource Management Plan (USDA Forest Service 1997) and the BA/BE completed for the Black Hills National Forest, Land and Resource Management Plan Revision (Forest Plan BA/BE).

A list of Federally threatened, endangered and proposed species has been provided by the U.S. Fish and Wildlife Service (USFWS), South Dakota State Office, and last verified on September 17, 2001. The South Dakota State Office is the primary contact for the Black Hills in South Dakota. The sensitive species list for the Rocky Mountain Region was published as a Regional Supplement (2670-94-2), effective March 21, 1994. The additional listing of the black-tailed prairie dog as sensitive was issued by the R-2 Regional Forester (memo dated June 14, 2000).

The Fanny Project Area contains approximately 23,326 acres of National Forest land, with an additional 573 acres of private land 'inclusions', that are primarily located in the bottom meadow land. The project area contains two different Forest Plan Management Areas:

MA 5.1 (resource production emphasis) – 5,141 acres (22%)

MA 5.4 (big game winter range) – 18,185 acres (78%)

Vegetative communities- Fanny Project Area is dominated by immature and mature ponderosa pine stands, with rocky mountain juniper, mountain mahogany shrub land, and dry, upland meadows. Using the habitat type classification presented in *RM-276- (Forest Vegetation of the Black Hills NF of SD and Wy: A Habitat Type Classification, 1987)*, the primary habitat types include: *Pinus ponderosa-Juniperus scopulorum; Cercocarpus montanus/Bouteloua curtipendula* for the southern 2/3 of the Fanny Project Area, and some *Pinus ponderosa/Symphoricarpus albus* in the northern 1/3. When this is cross referenced with *The Nature Conservancy's- Black Hills Community Inventory (Marriott, et.al. 1999*) the plant community types for the Fanny area would include:

Dry Coniferous Forests and Woodlands –Pinus ponderosa/Schizachyrium scoparium; Pinus ponderosa/Juniperus scopulorum; and some Pinus ponderosa/Symphoricarpos albus.

Upland shrubs- Cerocarpus montanus/Bouteloua curtipendula

Dry Mixedgrass Prairies- Pascopyrum smithii-Bouteloua gracilis

Topography varies from steep rugged terrain (rim rock and rocky outcrops), to gentle rolling hills. The majority of this landscape supports contiguous pine stands broken by several wide meadows in drainage bottoms. Recent large wildfires have occurred within or adjacent to this area (the 80,000+ acre Jasper fire had been primarily contiguous ponderosa pine stands, but is now largely in an herbaceous condition). There are five or six small (<2 acres each) hardwood (aspen) clones. There is no perennial stream-flow. Water is confined to less then a dozen developed springs. The private land consists primarily of dry meadow bottomland. There are yearlong residences on the private land in Redbird Canyon. This area has an extensive road system that averages over five (5) miles of road per square mile. These roads provide access for various forest management activities, and recreational uses.

The purpose and need for the Fanny Project is to provide commercial timber, maintain vegetative species and age class diversity, protect the timber resource from insect and disease, protect soil and water resources, and protect or enhance habitat needs for wildlife while meeting Forest Plan goals and objectives, consistent with Forest Plan standards and guidelines.

There are 31 vertebrate wildlife species, 5 invertebrate species, and 18 plant species on the USF&WS's proposed, endangered and threatened list, or the Forest Service Region 2 Sensitive species list that are known to occur, or could occur because there is the potential for suitable habitat to exist in the Black Hills. A list of these wildlife and plant species can be found in Appendix A. However, due to the specific environment (vegetative, hydrological, geographical) of the project area, not all of these species are present. All species that could be reasonably expected to occur in the **Fanny Project Area** can be found in Section V (Analysis of Effects) of this document. For the species specific 'Risk Assessment' refer to Appendix B.

II. AREA AFFECTED BY THE PROPOSED ACTION

This BA/BE was developed to review the proposed action alternatives of the Fanny Project Area vegetative treatment Environmental Assessment on the Hell Canyon Ranger District, Black Hills National Forest.

III. PREFIELD REVIEW

The pre-field review of Region 2 sensitive species and Federally Endangered and Threatened and Proposed species was completed using survey results, district records, literature reviews, on-line databases and South Dakota Natural Heritage Database.

IV. FIELD RECONNAISSANCE

A field reconnaissance of the Fanny Project Area was completed in the summer of 2002. Surveys for reptiles/amphibians and sensitive plants were conducted in June-July, 2002 and focused on areas around water (springs/seeps). Surveys for the northern goshawk were conducted during the nesting season in areas where suitable habitat was present. Surveys for other sensitive wildlife were done in conjunction with timber stand reconnaissance. All sensitive specie surveys were conducted by wildlife technicians and District wildlife biologists.

V. ANALYSIS OF EFFECTS

Risk assessments were conducted on the effects of the proposed action on USFWS endangered, threatened and proposed species and R2 Sensitive Species that are known to occur in the Black Hills. Impacts to species caused by the proposed action are discussed (Appendix B). Mitigation and monitoring to the proposed action to reduce the effects to the Threatened, Proposed, Endangered and R-2 Sensitive species can be found in Appendix C.

The list of species that occur or may potentially occur in the Fanny Project area was compiled from field reconnaissance conducted during 1996 and 1999 for project analysis. In addition, sensitive plant inventories, literature, South Dakota Natural Heritage Database, and habitat maps provided in the Forest Plan BA/BE, online species information sources, and data collected for amendment to the Forest Plan were used for this Biological Assessment and Evaluation.

As several of these species were either not documented to be breeding or wintering in the Black Hills and/or suitable habitat for these species is not present they were not evaluated. Species that have been eliminated from this risk assessment are: Whooping Crane, Lynx, Gray Wolf, and American Burying Beetle.

One plant species (Prairie Moonwort) has not been documented in the Black Hills since 1973 (Crook County, Wyoming). Despite repeated surveys at that location in 1989, 1993, 1999, 2000, 2001, and 2002, and surveys in other areas of the Black Hills for Prairie Moonwort and other moonwort species, Prairie moonwort has not been found again. Although surveys are ongoing for moonwort species in the Black Hills, Prairie Moonwort is currently not considered to be present in the Black Hills and was not evaluated in this risk assessment.

The results of the pre-field review and field reconnaissance indicated that two federally listed species (Custer County, SD), and 16 Region 2 sensitive species occur or could potentially occur (habitat may be present) in the Fanny Project Area. These species include:

Federally Listed Species

Bald Eagle

Black-footed Ferret

Region 2 Sensitive Species

Fauna-

- Northern Goshawk
- Merlin
- Black-backed Woodpecker
- Lewis's Woodpecker
- Pygmy Nuthatch
- Golden-crowned Kinglet
- Loggerhead Shrike
- Flammulated Owl
- Tiger Salamander
- Northern Leopard Frog
- Black Hills Red-bellied Snake
- Townsend's Big-eared Bat
- Fringed-tailed Myotis
- Tawny Crescent Butterfly

Flora-

- Marsh Muhly
- Northern Arnica

The proposed action (Alternative 2 or 3) includes harvest of between 5.2 and 4.6 million board feet of commercial timber from between 6,556 acres (Alt 2) and 6,046 acres (Alt 3) of National Forest land. Associated treatments would be road reconstruction, temporary road construction, noxious weed treatment, pre-commercial thinning, hardwood release, prescribed burning and fuel treatments, and road decommissioning. Refer to the Fanny Environmental Assessment (EA) for a more detailed explanation of these two action alternatives. The selection of a preferred alternative has not been decided. The determinations made in this document reflect the potential effects that could occur from either of these action alternatives.

VI. DETERMINATION

The determination of effects on federally listed species and Region 2 Sensitive Species in this BA/BE were made as the result of the information gathered in the pre-field review, field reconnaissance, and effects analysis. The basis for these determinations was potential habitat, distribution, effects from forest activities, and the Black Hills National Forest Plan, including the Phase I Amendment, (Standards and Guidelines). The determination language is set forth in Forest Service Manual 2670 and by the USFWS.

Objectives, standards, and guidelines have been identified in the Forest Plan that protect all federally listed species and conserve Region 2 Sensitive Species found in the Black Hills. In addition, the Forest Plan Phase I Amendment provides for additional direction for the protection of habitat for these species. This project will follow the objectives, standards, and guidelines that are applicable to those species and habitats found in the proposed action of the Fanny Project Area.

With implementation of Forest Plan and the Forest Plan Phase I Amendment and project specific mitigation measures (Appendix C), the determination of "No Effect" is made for the black-footed ferret and bald eagle.

A determination of 'May adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability range-wide' is made for the following species:

Fauna- Northern Goshawk, Black-backed Woodpecker, Lewis's Woodpecker, Pygmy Nuthatch, Golden-crowned Kinglet, Flammulated Owl, Tiger Salamander, Northern Leopard Frog, Black Hills Red-bellied Snake, Townsend's Big-eared Bat, Fringed-tailed Myotis, Tawny Crescent Butterfly.

Flora- Marsh Muhly.

A determination of 'No Impact' is made for the following species:

Fauna-Osprey, Ferruginous Hawk, Western Burrowing Owl, Olive-sided Flycatcher, Purple Marten, Fox Sparrow, Northern Three-toed Woodpecker, Upland Sandpiper and the Loggerhead Shrike, American Marten, Dwarf Shrew, Black-tailed Prairie Dog, Milk Snake, Cooper's Rocky Mountainsnail, and Striate Disc Snail, Regal Fritillary Butterfly.

Flora- Northern Arnica.

A determination of 'May beneficially impact' is made for the following species:

Fauna- Merlin.

All other R2 sensitive species not listed here have a **no impact** determination.

VII. CONSULTATION WITH U.S. FISH AND WILDLIFE SERVICE

In a letter dated September 17, 2001, the USFWS reaffirmed concurrence with the Forest Service's Biological Assessment that the revised Forest Plan (including Phase I Amendment) may affect but is not likely to adversely affect the bald eagle, and American burying beetle. The peregrine falcon was officially de-listed in 12/2000. The USFWS also concurred that the Plan revision will not affect the black-footed ferret and gray wolf. There have been no additional changes to the Forest Plan's operating criteria, and no additional information has become available.

BA/BE APPENDIX A

List of Threatened, Endangered, Proposed and Region 2 Sensitive Species in the Black Hills National Forest.

Species known or believed to have the potential to occur in the Fanny project Area are in 'bold'

Bird Species	Status
Bald Eagle *Haliaeetus leucocephalus*	**USFWS Threatened**
Black-backed Woodpecker ***Picoides arcticus***	R2 Sensitive
Burrowing Owl *Athene cunicularia*	R2 Sensitive
Flammulated Owl ***Otus flammeolus***	R2 Sensitive
Ferruginous Hawk *Buteo regalis*	R2 Sensitive
Fox Sparrow *Passerella iliaca*	R2 Sensitive
Golden-crowned Kinglet ***Regulus satrapa***	**R2 Sensitive**
Lewis's Woodpecker ***Melanerpes lewis***	**R2 Sensitive**
Loggerhead Shrike *Lanius ludovicianus*	R2 Sensitive
Merlin ***Falco columbarius***	**R2 Sensitive**
Northern Goshawk ***Accipiter gentilis***	**R2 Sensitive**
Osprey *Pandion haliaetus*	R2 Sensitive

Peregrine Falcon *Falco peregrinus*	USFWS De-listed (listed in 1997 FP)
Purple Martin *Progne subis*	R2 Sensitive
Pygmy Nuthatch ***Sitta pygmaea***	**R2 Sensitive**
Olive-sided Flycatcher *Contopus cooperi*	R2 Sensitive, Proposed Listing
Three-toed Woodpecker *Picoides tridactylus*	R2 Sensitive
Upland Sandpiper *Bartramia longicauda*	R2 Sensitive
Yellow-billed Cuckoo *Coccyzus americanus*	USFWS Candidate, R2 Sensitive

Reptiles and Amphibian Species

Black Hills Red-bellied Snake ***Storeria occipitomaculata***	**R2 Sensitive**
Leopard Frog ***Rana pipiens***	**R2 Sensitive**
Pale Milk Snake *Lampropeltis triangulum multistrata*	R2 Sensitive
Tiger Salamander ***Ambystoma tigrinum***	**R2 Sensitive**

Animal Species

American Marten *Martes americana*	R2 Sensitive
Black-footed Ferret *Mustela nigripes*	USFWS Endangered

Black-tailed Prairie Dog *Cynomys ludovicianus*	R2 Sensitive, USFWS Candidate
Dwarf Shrew *Sorex nanus*	R2 Sensitive
Fringe-tailed Myotis ***Myotis thysanodes pahasapenis***	**R2 Sensitive**
Spotted Bat *Euderma maculatum*	R2 Sensitive
Swift Fox *Vulpes velox*	R2 Sensitive, USFWS Candidate
Townsend's Big-eared Bat ***Corynorhinus townsendii pallescens***	**R2 Sensitive**

Invertebrate Species

American Burrowing Beetle *Nicrophorus americanus*	USFWS Endangered
Cooper's Rocky Mtn. Snail *Oreohelix strigosa cooperi*	R2 Sensitive
Regal Fritillary *Speyeria idalia*	R2 Sensitive
Striate Disc Snail *Discus shimekii*	R2 Sensitive
Tawny Crescent *Phyciodes batesii*	R2 Sensitive

Plant Species

American Trail Plant *Adenocaulon bicolor*	R2 Sensitive
Autumn Coralroot *Corallorhiza odontorhiza*	R2 Sensitive
Autumn Willow *Salix serissima*	R2 Sensitive

Bloodroot *Sanguinaria canadensis*	R2 Sensitive
Dwarf Scouring Rush *Equisetum scirpoides*	R2 Sensitive
Fox Tail Sedge *Carex alopecoidea*	R2 Sensitive
Giant Helleborine *Epipactis gigantea*	R2 Sensitive
Greater Bladder Sedge *Carex intumescens*	R2 Sensitive
Great-spurred Violet *Viola selkirkii*	R2 Sensitive
Large Roundleaf Orchid *Platanthera orbiculata*	R2 Sensitive
Long-stalk Sedge *Carex pedunculata*	R2 Sensitive
Marsh Muhly ***Muhlenbergia glomerata***	**R2 Sensitive**
Northern Arnica ***Arnica lonchophylla***	**R2 Sensitive**
Prairie Moonwort *Botrychium campestre*	R2 Sensitive
Southern Maidenhair Fern *Adiantum capillus-veneris*	R2 Sensitive
Trailing Clubmoss *Lycopodium complanatum*	R2 Sensitive
Treelike Clubmoss *Lycopodium dendroideum*	R2 Sensitive
Woolgrass *Scirpus cyperinus*	R2 Sensitive

BA/BE APPENDIX B

Species Risk Assessments For the Fanny Project

(Fauna)
Bird Species

Bald Eagle (*Haliaeetus leucocephalus*)

Habitat: This species is closely associated with lakes and large rivers in open areas, forest, mountains and along seacoasts. Bald eagles need large trees adjacent to water, preferably snags, but also live trees or boulders that provide good visibility for perching. Eagles winter in coastal habitats and inland where ice-free waters allow access to fish, and feed primarily on fish they catch or occasionally takes from an osprey. Eagles will feed on waterfowl, other birds, carrion, small to medium sized mammals and turtles. In the Black Hills, this species utilizes winter habitat where carrion is available (along highways and in big game winter range) and where there are open lakes and streams.

Distribution: This species breeds from central Alaska east to Canada, south to central Arizona and New Mexico, west to California and along the Gulf Coast. This species is very locally distributed in the interior of North America. Bald eagles generally winter throughout their breeding range, but most frequently from southern Alaska and southward of Canada. In the Black Hills, this species is a winter resident only (SDOU 1991). Bald Eagles have been documented in all counties in the Black Hills (USFWS 2000, District Files).

Project Review: Potential suitable winter habitat is present in the Fanny Project Area.

Analysis of Effects:

> Direct: Winter roost trees maybe removed.
> Indirect: Winter roost trees may be removed especially along travel ways for the safety of the public.
> Cumulative: None expected.

Determination: This project proposal will have no effect on the bald eagle or critical habitat.

Rational for Determination: This species is a winter resident in the Black Hills. There is no critical habitat in the Black Hills or in the Fanny Project Area. In addition, this species population is in an upward trend in South Dakota with successful nesting in Gregory, Brown, Yankton, Bon Homme, Spink, Charles Mix, Union, Roberts, Sanborn, Hutchinson, and Meade Counties (USFWS 2000). Potential suitable breeding habitat does not occur in the Fanny Project Area. The nearest body of water is LAK Reservoir (approximately 100 surface acres, on private land) three mile west of the Fanny Project Area.

Osprey (*Pandion haliaetus*)

Habitat: This species is closely associated with lakes and large rivers in open areas, forest, mountains, and marshes and along seacoasts. Osprey will nest or perch on structures close to water that will allow clear flight access to their nests. Osprey winter in the southern United States, South America and Mexico where ice-free waters allow access to fish, and feed primarily on fish it catches. Osprey will feed almost exclusively on both freshwater and saltwater fish, small sized mammals, amphibians, reptiles and birds.

Distribution: This species breeds from central Alaska east to Canada, south to central Arizona and New Mexico, west to California and along the Gulf Coast. This species is uncommon but is found on every continent except for Antarctica and is well distributed across their range. Osprey generally winter in the southern United States, Mexico and South America. In the Black Hills, this species is a summer resident only (SDOU 1991). Osprey has been documented in all counties in the Black Hills (District Files). There are few ospreys nesting in the Black Hills but they are uncommon in occurrence. Population trend is upward (District Data).

Project Review: Potential suitable breeding and feeding habitat is not present in the Fanny Project Area. If LAK Reservoir were ever used by osprey they would have suitable nesting habitat much closer then the Fanny Project Area, three miles to the east.

Analysis of Effects:

Direct: None expected.
Indirect: None expected
Cumulative: None expected.

Determination: The proposed action and its alternatives will have no impact on the osprey.

Rational for Determination: This species is a summer resident in the Black Hills. There is no critical habitat in the Black Hills or in the Fanny Project Area. However, this species population is in an upward trend in South Dakota, with successful nesting in Pennington, Custer and Lawrence Counties. Potential suitable breeding habitat does not occur in the Fanny Project Area.

Northern Goshawk (*Accipiter gentilis*)

Habitat: This species is considered a forest generalist species and nests in most forest types throughout their geographic range. Forest stands containing nests are often small (approximately 30 to 280 acres in size) but are mostly closed canopy, late successional forest in close proximity to small forest openings and water. Prey species vary based on region, season and availability. Main foods include small mammals, small to medium birds, retiles and some insects. In the Black Hills, this species is usually found in ponderosa pine, especially in more closed canopy with multiple vegetation structure. Nest stands are typically mature, closed canopy (greater than 50%) ponderosa stands with high basal area. Prey species are squirrels, rodents, birds and reptiles. Little is known about migration of this species (Natureserve 2001).

Distribution: This species is uncommon to rare resident in forests of Canada and northern and western United States. They are found also in Europe and Asia. In the Black Hills, this species is considered uncommon resident and has been found nesting in all the counties in the Black Hills.

Project Review: Regional population trend is downward since 1980 (BBS data). Recent events on the Hell Canyon District combined with District survey data show a similar trend. Forest-wide, monitoring in 2001 suggests a less than stellar year for goshawk reproduction (FP 2001 Monitoring Report). However there is insufficient evidence to indicate that the goshawk population, Forest-wide, is in decline. It continues to be classified as stable.

There is potential, foraging and over-wintering habitat in the Fanny Project Area, however suitable nesting habitat is limited. There is one known historic nest stand in the project area with no documented activity since 1992 and this nest is monitored yearly (1992-2002).

Analysis of Effects:

> Direct: This species' nesting habitat potential would be affected by the action alternatives. If a new nest is established in a proposed harvest area, there could be direct loss of an active nest stand during harvest operations. Mitigation measures provide adequate direction to protect these nest sites when found. Removal of canopy and ground cover may reduce prey species' food, escape, and nesting habitat. Two PFA's (post fledgling area) with protected nesting habitat have been established; one around the historic nest, as directed by FP Standards 3109 and 3114, (watershed HUC#-1070405), and a second PFA located in the most suitable nesting habitat remaining within the Fanny Project Area (watershed HUC#-1070404).
> Indirect: Any loss of potential cover habitat may increase susceptibility to predators. Nestling and fledgling success can be affected by environmental conditions (heat, drought, wind, fire) that can be intensified by timber harvest. Some prey species could be adversely affected as well.
> Cumulative: Continued loss of nesting habitat potential throughout the Planning Area as a result of large wildfires, insect and disease epidemics, past, current, and reasonably foreseeable future vegetative management in the Black Hills.

Determination: All action alternatives may adversely impact individuals. This is not likely to result in a loss of species viability on the Planning Area. The Fanny project Area contains very few areas that currently provide suitable nesting habitat for goshawks and virtually all of these acres are to be deferred in the action alternatives.

Rational for Determination: This species has a low reproductive rate and is vulnerable to predation, environmental extremes, habitat loss and disturbance. Regional population trend is downward. However, the Forest Plan Phase I Amendment provides for additional standards and guidelines to provide protection of this species habitat. In addition, mitigation measures provide for additional protection of nesting goshawks if found during harvest operations and post sale activities. Prey species such as chipmunks and some birds will benefit by increasing grasses and forbs (cover and food source) or young-forest conditions, while other prey species like woodpeckers and squirrels that favor a mature over-story may decrease.

Ferruginous Hawk (*Buteo regalis*)

Habitat: This species is an open country species that inhabits grasslands, shrub steppes, and deserts of North America with nesting in seventeen states in the United States and three provinces in Canada. This species avoids montane forest, aspen parkland and habitats recently altered by agricultural cultivation. This species uses nesting substrates with a strong preference to elevated nest sites ranging from cliffs, trees, utility structures and farm buildings to haystacks and relatively level ground. Prey species is mostly prairie dogs, ground squirrels and rabbits. During the winter, this species sometimes roosts communally near prairie dog towns and where pocket gophers are abundant.

Distribution: This species breeding range is generally in western North America and in the central Great Plains region. The ferruginous hawk tends to be migratory (northern range populations) but not much is known about movement patterns of this species. This species appears to migrate short distances or be sedentary. Although there is grassland habitat, there is limited potential for prairie dog towns. This species has not been recorded breeding in the Black Hills. Population decline has been noted on the edges of the ferruginous hawks range. Population declines have been attributed to loss of habitat, reduction in prey species, poisoning, and land management changes.

Project Review: There is limited suitable habitat in the Fanny Project Area (prairie grassland). Therefore, this species will not be affected by the action alternatives.

Analysis of Effects:

> Direct: There are no direct effects on this species from the action alternatives.
> Indirect: Indirect effects are not anticipated on this species from the action alternatives.
> Cumulative: Cumulative effects are not anticipated from the action alternatives, and any of the associated activities.

Determination: The proposed action will have no impact on the ferruginous hawk.

Rational for Determination: This species prefers open country habitats near prairie dog habitat. This type of habitat is not found in the Fanny Project Area. This species has not been documented breeding or wintering in the Black Hills, the ferruginous hawk will not be affected by the action alternatives.

Merlin *(Falco columbarius)*

Habitat: The merlin inhabits open areas such as forest edges, bogs, lakes in boreal and coastal forests and prairie-parkland of the northern Great Plains. Some individuals remain in prairie habitat even in winter; others will use almost any habitat type encountered in its winter range. This species nests mostly in trees, often in old magpie, crow and other raptor nests. In South Dakota, this species nest in open pine forest and woodland edges, from April through June. The Merlin preys on small to medium sized birds; also takes large insects, spiders, crayfish, toads, small snakes, bats and small mammals (DeGraaf et al. 1991, Sodhi, et.al.1993).

Distribution: Range is from Alaska and Labrador south to Nova Scotia, Michigan, and Oregon. This species winters from British Columbia and Newfoundland to northern South America (Bull and Farrand Jr. 1974). The Black Hills is on the southern periphery of their breeding range (Udvardy 1977, Sodhi et. al. 1993).

Project Review: In the Black Hills, this species is considered an uncommon summer resident (Peterson, 1993). Potentially suitable habitat is present in the project area, associated with burns and post-fire grass/forb structural stage. Breeding records for merlin are from Custer and Fall River Counties in South Dakota (Peterson, 1995) and in Crook County, Wyoming (Luce et.al. 1997). Populations of the prairie subspecies of merlin appear to be stable (Sodhi et. al. 1993). There are no local population trend data.

Analysis of Effects:

Direct: Prey habitat for this species would likely benefit in all action alternatives (thinning, prescribed burning). Snags that have raptor nests should be protected through project mitigation. Areas where this species may nest (Jasper burn vicinity) have increased in this vicinity.

Indirect: Nests could be affected by harvesting equipment and ground disturbance.

Cumulative: There would be no adverse cumulative effects as a result of this project.

Determination: The proposed action may beneficially impact the merlin.

Rational for Determination: Merlin are considered an uncommon species but not generally adversely affected by forest management activities. This species is closely tied to nesting in snags, raptor nests, and magpie nests, which are limited in the Black Hills. However, the Fanny Project Area and adjacent Jasper Fire area should provide suitable foraging (open areas) and nesting habitat for this species. The project proposal could further enhance foraging habitat.

Upland Sandpiper (*Bartramia longicauda*)

Habitat: This species inhabits open grassland, prairies, and hayfields during the breeding season. During migration, the upland sandpiper prefers open country in general. The upland sandpiper is a ground nester and feeds on insects, weevils, ants, berries, waste grain and seeds.

Distribution: Range is from Alaska and central Canada to central United States prairie regions. This species winters in South America (DeGraaf et al. 1991). In South Dakota, this species is considered a common resident, except in the Black Hills where it is considered local (SDOU 1991, Peterson 1995, Luce et. al. 1997). Once common, numbers have been reduced due to past hunting pressure and agricultural practices. Other factors that have affect this species are loss of prairie habitat and cover from predators (Finch 1992).

Project Review: This species is found in all counties in the Black Hills but is absent from the higher Black Hills (Peterson 1995). The regional and national population tends appears to be stable (BBS). Habitat is limited to dry prairies and grasslands of the lower Black Hills. Potentially suitable habitat is limited in the Fanny Project Area. The RMBO surveys failed to detect this species in 2001. District records list a single individual observation five miles south of the Fanny Project Area near Elk Mountain Lookout, in 1995.

Analysis of Effects:

Direct: It is unlikely that any of the alternatives would either enhance or harm habitat for this species. Since the action alternative include removing encroaching pine from upland meadows, it is possible that this could produce a small benefit. All alternatives may beneficially enhance this species habitat by increasing insects, cover from grass/forb structural stage and other food sources (often associated with decay processes).

Indirect: Based on this species nesting habitat requirements, harvesting equipment and ground disturbance could impact individual nest success. Herbicide and pesticide use may decrease the amount of prey species available. Prescribed burning may affect nesting if completed in the spring or during the nesting/fledgling period.
Cumulative: This species is susceptible to hunting loss during migration, predation of young and mortality on wintering grounds (pesticide use and habitat loss). Livestock grazing that reduces grass cover to less than 20-30 cm tall will increase predators and reduce nesting success (Carter 1992).

Determination: No Impact. The proposed actions are not expected to produce a significant beneficial impact for the upland sandpiper.

Rational For Determination: All of the action alternatives will increase grass/forbs production and reduce natural forest succession. However, the preferred habitat for this species is very limited within the Fanny project Area. The proposed action will not limit habitat availability for this species if it is present.

Yellow-billed Cuckoo (*Coccyzus americanus*)

Habitat: This species breeds in large blocks of riparian habitat, particularly woodlands with cottonwoods and willows. Dense under-story foliage appears to be an important factor for nest location, while cottonwood trees are important foraging habitat. Nesting is restricted to areas close to water where humidity is necessary for brooding and rearing young (microclimate). The yellow-billed cuckoo's prey species are cicadas, caterpillars, or other large insectivorous species (USFWS, 2001). In the Black Hills, this species has been identified as a hardwood/riparian edge species (Peterson, 1993). This species has been documented in the lower Spring Creek and the lower Rapid Creek drainages (Pettingill and Whitney, 1965).

Distribution: The breeding range of the yellow-billed cuckoo formerly included most of North America from southern Canada to the Greater Antilles and northern Mexico. In recent years, this species distribution, especially in the west has contracted to Sacramento, California and southern Idaho. This species over winters in South America: Columbia to Venezuela, and south to Argentina. Regional data from BBS data indicate a decline from 1980 to 1996 (USFWS 2001).

Project Review: There are two subspecies *Coccyzus americanus occidentalis* and *Coccyzus americanus americanus* that have been identified tentatively as distinct subspecies (USFWS 2001) until further studies can be completed. The *Coccyzus americanus occidentalis* subspecies species has been added to the USFWS candidate list, but warrants listing as threatened or endangered (USFWS 2001). It is unclear what subspecies of yellow-billed cuckoo has been documented in the Black Hills, so for the purposes of this Biological Evaluation/Biological Assessment it will be concluded that they are one species. Potential habitat is not present within the Fanny Project Area. There are no perennial streams, riparian areas, or cottonwood trees.

Analysis of Effects:
Direct: There would be no direct effects on this species habitat with the proposed action.
Indirect: None anticipated.
Cumulative: None anticipated.

Determination: No Impact.

Rational For Determination: Although this species has been documented in the lower to mid elevations in the Black Hills, there is no cottonwood/riparian habitat within the Fanny Project Area. The closest potential habitat of any size is along the Cheyenne River, 25 miles to the south.

Western Burrowing Owl (*Athene cunicularia hypugea*)

Habitat: The burrowing owl inhabits open country (e.g. prairies, sagebrush flats, pinyon-juniper slopes, deserts, fallow fields, seashore dunes) wherever rodent burrows are numerous. This owl nests in abandoned burrow of primary burrow species (prairie dog, fox, ground squirrel), therefore habitat is where soil types are easily excavated by animals. This species is sometimes found in vacant lots near human habitation, and airports. This owl spends time on the ground or on low perches. This species is nocturnal but more rarely by day, and eats mostly insects, rodents, amphibians, retiles, bats and small mammals. Burrowing owls often nest in colonies in abandoned burrows of prairie dogs or ground squirrels, and may use the same nest site location is subsequent years if left undisturbed (Haug et.al. 1993)

Distribution: This species is widely distributed through Alaska, Canada and south to Mexico and Central America (Udvardy 1977). This species winters throughout its breeding range except for the northern portions of the Great Plains and Great Basin. In South Dakota, the burrowing owl is a locally common summer resident in the west, although rare in the Black Hills. This species is uncommon in the eastern portion of the state, and a casual winter visitor. Declines in owl populations and current irregularities in its distribution are attributed to loss of burrow nest sites resulting from eradication of colonial burrowing rodents, particularly prairie dogs (Natureserve 2001), loss of habitat due to intensive agricultural practices (pesticide and rodent eradication) and habitat fragmentation.

Project Review: Breeding records are known from Custer, Fall River counties in South Dakota and Weston County, Wyoming. Most records were limited to prairie dog towns (Peterson 1995, Luce et. al. 1997). Some potential habitat (grassland) can be found in the Fanny Project Area but is very limited. There are no prairie dog towns in the Fanny Project Area.

Analysis of Effects:

Direct: All action alternatives could enhance this species habitat by increasing burrowing owl prey habitat. Increases in meadow habitat may increase small mammal populations.

Indirect: This species is susceptible to habitat loss due to decimation of prairie dog towns, predation, indiscriminate shooting, and rodent poisoning. The Jasper wildfire, which occurred in 2000 directly east of the Fanny Project Area, may have increase potential habitat for this species.

Cumulative: Habitat is limited in the Black Hills. Regional population trend is stable since 1980 (BBS data) but other states report declines (Haug et. al., 1993).

Determination: The proposed action and its alternatives will have no impact on the western burrowing owl.

Rational for Determination: This species has breeding records in all counties in the Black Hills (Luce et.al. 1997, SDOU 1991). However, this species is closely tied to black-tailed prairie dog towns. Prairie dog towns are limited to the foothills (Haug et.al.1993, USFWS, 2000) and prairie grasslands in the southern hills. At this time, there are no black-tailed prairie dog towns in the Fanny Project Area. Some suitable grassland (foraging) habitat exists for this species in the Fanny Project Area, but it is unlikely that it is adequate for this species since there is very limited nesting habitat provided.

Flammulated Owl *(Otus flammeolus)*

Habitat: This species primarily inhabits open ponderosa pine or forests, or dry montane conifer or aspen forests, often with dense saplings, oak or other brushy understory. This owl is primarily insectivorous (moths, crickets, grasshoppers, and beetles), but is known to prey on small mammals and birds as well. They hunt exclusively at night. Flammulated owls nest are in natural cavities or old woodpecker holes and are known to reused nests year after year. Nests sites that provide open, mature canopy conditions (open flight path to nest) appear to be preferred (McCallum, BNA#93, 1994).

Distribution: Documented breeding range includes southern British Columbia, Washington, Cascade and Sierra Nevada mountain ranges, forests of Nevada, New Mexico and Colorado, and recently found in forests of Idaho and Montana. Migration in this species is still poorly understood but recent review if the data suggests that this species may be a long distance, north-south, migrant. Experiments have found that his owl does not become torpid in cold temperatures. It is likely that prey availability also plays a large role in the migratory behavior of this species.
Until last year, this species had not been confirmed to occur in the Black Hills. An incidental observation (unconfirmed) was reported in the summer of 1994 by a bat biologist doing mist netting in the southern Black Hills. He reported a "small, dark-eyed owl" becoming entangled in the net. He released the owl. However, last year at least one flammulated owl was detected (vocal calls at night) during June, 2002 in the north-central Black Hills (personal comm.). These observations do not prove a flammulated owl population has established itself in the Black Hills. Further monitoring of this development is indicated.

Project Review: No owl surveys were done for the Fanny Project Area. Based on published information, and the recent Black Hills sightings it is reasonable to expect that suitable habitat for flammulated owls is present in Fanny Project Area.

Analysis of Effects:

Direct: All action alternatives have the potential to reduce preferred habitat for this species by removing large over-story trees, and possibly removing snags (if deemed safety hazards to harvest operations).
Indirect: Increases in the owl's prey population may occur from harvesting that releases under-story vegetation thus improving insect and small mammal habitat.

Cumulative: Large areas of snag habitat have been made available from Jasper, Elk Mountain, Rodgers Shack, and other recent wildfires in this vicinity. However, these 'open areas' are not considered preferred flammulated owl nesting habitat. They may improve prey species abundance on a general scale. Mature trees, relatively open, park-like, stands are considered more suitable habitat. Timber harvesting that removes mature 'over-story', and loss of snags will reduce potentially suitable habitat.

Determination: All action alternatives could adversely impact individuals and potentially suitable habitat for this species, if present. This is not likely to result in a loss of species viability, nor cause a trend to federal listing or a loss of species viability range-wide.

Rational for Determination: Commercial harvest of large diameter green trees could negatively impact this species and nesting habitat could be lost. However, one record of a pair of flammulated owls does not constitute a 'viable population'. If a stable breeding population does becomes established in the Black Hills it would be considered an expansion of the owls range.

The Forest Plan Phase I Amendment increases the amount of snags required on the landscape along with retaining large diameter green trees for future snag levels (FP Standard 2301& 2306). It is reasonable to assume, based on current literature, that these standards would also help improve habitat for this species in treated areas. In addition, Forest Plan Standards that enhance goshawk nesting habitat, hardwoods, and pre-commercial thinning and fuel reduction treatments that reduce dense, sapling (regeneration) pine under-story may also benefit this species, if present.

Black-backed Woodpecker (*Picoides articus*)

Habitat: This species inhabits coniferous forests. In the Black Hills it seems to favor late successional ponderosa pine forests, and areas that have been burned over or insect epidemic areas. The black-backed woodpecker eats wood boring insects and their larvae underneath loose bark on dead trees. This species is a primary cavity nester and is closely tied to stand replacing events, such as insect outbreaks or large wildfires. Literature states that this species requires dense un-logged stands (pre-burn, greater than 70% crown closure) for nesting and foraging (Saab and Dudley 1998). Their nest tree is usually a hard snag, > 15" DBH, but they are known to utilized smaller diameters > 9" DBH.

Distribution: This species range is in boreal forest across Canada with extension through the mountain ranges of the west down to Sierra Nevada (Udvardy 1977). In the Black Hills, this species is considered an uncommon, permanent resident in higher elevations, and a disjunct population from the rest of it's range (Peterson 1995, SDOU 1991, Luce et. al. 1997). This species' preference for burned forests in a time of fire suppression, its eruptive populations, and lack of population information has identified it as a species of concern (Finch 1992). There is no local or regional population trend available (BBS). Recent surveys (RMBO) are beginning to fill gaps in local data. This species is susceptible to human disturbance when nesting.

Project Review: Potential suitable habitat is present in the project area. Late succession stands containing large diameter dead trees (snags) created by natural events (wind, lightening), and areas of mountain pine beetle activity and large burned areas are both present within or adjacent to the Fanny Project Area.

Analysis of Effects:

Direct: Habitat for this species will be decreased by the proposed action in the treated areas. Removal of commercial wood (large dead trees > 9") will reduce future nesting habitat created by insects and disease in the proposed cutting areas. Removal of logging slash to landings will also decrease prey base (foraging habitat). However, designated late succession pine stands will not be treated in the Fanny Project, providing habitat for this species.

Indirect: Chemical treatments for noxious weeds and for insects and disease could impact insect (prey) availability.

Cumulative: The large area of suitable "source" (snags) habitat for the black-backed woodpecker species has been created by the Jasper Fire, Rodger Shack and Elk Mountain wildfires. In addition, the mountain pine beetle activity throughout the forest will increase suitable habitat in the Planning Area.

Determination: All action alternatives may adversely impact individuals, but are not likely to result in a loss of species viability on the Planning Area, nor cause a trend to federal listing or a loss of species viability range-wide.

Rational for Determination: Removal of mature trees, and harvest related snag loss would negatively impact this species habitat in the treated areas. In addition, sanitization of trees stands to reduce Mountain pine beetle spread will limit the amount of foraging substrate and potential nesting sites for this species. However, the Forest Plan Phase I Amendment increases the amount of snags required on the landscape along with retaining large diameter green trees for future snag levels. These standards, which are based on scientific literature, are expected to be adequate in providing at least minimum habitat needs for this species. In addition, the last two years of large fires along with the increase insect and disease activity has increase suitable habitat across the Planning Area. The proposed action will limit individual's use of treated areas (Fanny Project Area) but not affect viability throughout the Planning Area.

Three-toed Woodpecker (*Picoides tridactylus*)

Habitat: The three-toed woodpecker prefers coniferous forest, especially spruce in the boreal zone, or where burned over, logged or swampy. This species feeds on borers, insects, and beetle larvae underneath loose bark on dead trees. This species is a primary cavity nester, requiring large diameter hard snags (>16" DBH) and dense stands similar to the black-backed woodpecker.

Distribution: This woodpecker range is mostly circumpolar. In North America, this species ranges from Alaska, Canada, and west to the mountains of Arizona and New Mexico. It is less numerous than the black-backed woodpecker in the southern portions of its range but extends farther south in the Rockies. It is also more sedentary, rarely moving far from its home range (Bull and Farrand Jr. 1974). In the Black Hills, this species is considered a rare permanent resident (SDOU 1991, Luce et. al. 1997) and has been documented in a few locations in Lawrence, Pennington and Custer Counties in South Dakota. Regional population trend is substantially downward (BBS). This species is vulnerable to loss of large snags, salvage timber harvest and fire suppression.

Project Review: Potential suitable habitat (spruce, forest riparian) is not present in the project area.

Analysis of Effects:

Direct: Habitat for this species would not be affected by the action alternatives.

Indirect: None expected.

Cumulative: None expected. The large area of suitable habitat (snags) for the three-toed woodpecker species has been created by the Jasper Fire, Rodger Shack and Elk Mountain wildfires do not contain spruce forest. It is possible, but unlikely that the northern-three toed woodpecker would benefit from these dry pine forest events, as will some of the other woodpecker species.

Determination: No Impact. The alternatives at not expected to adversely impact suitable habitat or individuals.

Rational for Determination: Surveys for this species have continued to verify published literature regarding habitat preferences (RMBO, 2001). The northern-three toed woodpecker is observed in spruce forest type, or forested riparian areas. In the Black Hills, these are generally dominated by spruce, or are mixed conifer, or mixed conifer/hardwood. The Fanny Project Area contained no white spruce sites, nor riparian areas.

Lewis' Woodpecker (*Melanerpes lewis*)

Habitat: This primary cavity nester inhabits open country with scattered trees rather than dense forests. Open park-like ponderosa pine and forests are probably the major breeding habitat. It is attracted to burned-over areas but is also found in fringes of pine and juniper tree stands, and in deciduous forests, especially riparian (cottonwood) forest. This species feeds on flying insects, fruits and nuts. It gathers food and stores it for winter in tree bark crevices. The Lewis' requires large diameter snags (>19" DBH) for nesting and foraging (Tobalske 1997), and can excavate it's own cavity, but requires wood to be mostly soft. It will also use nests started by northern flickers, and other woodpeckers.

Distribution: This species breeds from central British Columbia, east to the Black Hills, south to northern Arizona and southern New Mexico. This species has limited occurrence throughout western United States (Tobalske, 1997). In the Black Hills, this species is considered an uncommon, summer resident (locally common in large burns or insect outbreaks). This species has been documented in all counties in the Black Hills of South Dakota and Wyoming (Peterson 1995, Luce et. al. 1997). The regional population trend is downward. This species is vulnerable to loss of large snags, salvage timber harvest and fire suppression. Prior to the Elk Mountain II wildfire (2001) there was a small breeding population of Lewis' woodpeckers near Elk Mountain Fire Lookout Tower (Weston County, Wyoming) approximately six (6) miles south of the Fanny Project Area. That fire burned back through the old 'Elk Mountain fire area (1983)' consuming the residual large diameter standing dead (snag) trees.

Project Review: Potential suitable habitat is presumed present in the project area in respect to large dead trees, snags created by mountain pine beetle activity or wildfire, and late succession pine stands.

Analysis of Effects:

Direct: Habitat for this species will be decreased by the proposed action. Removal of commercial wood (large dead trees > 9") will reduce future nesting habitat created by insects and disease in the proposed cutting areas. Removal of logging slash to landings will also decrease prey base. However, areas of late succession forest will be left untreated.

Indirect: Chemical treatment of noxious weeds and for insects and disease will impact prey species.

Cumulative: A large area of suitable habitat (snags) for the Lewis's woodpecker species has been created by the Jasper Fire, Rodger Shack and Elk Mountain II wildfires. In addition, the increase in beetle activity throughout the forest will likely increase suitable habitat in the Planning Area.

Determination: All action alternatives may adversely impact individuals, but are not likely to result in a loss of species viability on the Planning Area, nor cause a trend to federal listing or a loss of species viability range-wide.

Rational for Determination: Commercial timber removal of large diameter, mature green trees will reduce "source" nesting habitat, and loss of large standing dead (snag) trees due to harvest activities in the proposed cutting areas, could potentially reduce existing nesting habitat. In addition, sanitization of trees stands to reduce Mountain pine beetle spread will limit the amount of foraging substrate and potential nesting sites for this species. However, the Forest Plan Phase I Amendment increases the amount of snags required on the landscape along with retaining large diameter green trees for future snag levels and are deemed adequate to provide minimum habitat needs for this species. In addition, recent large wildfires along with increased insect activity have

likely increased suitable habitat in the Planning Area. The proposed action will limit individual's use of treated areas but not affect viability throughout the Planning Area.

Olive-sided Flycatcher (*Contopus cooperi*)

Habitat: This species prefers openings with dead trees; usually found near water, especially beaver ponds, burns, and blow downs. Breeding habitat is in forest and woodlands, especially burned-over areas with standing dead trees along edges. Standing dead trees are used for singing and feeding perches. Prey species are most exclusively flying insects (Hymenoptera), beetles (Coleoptera), flies (Diptera), bugs (Hemipera) grasshoppers, moths and dragonflies (Altman and Sallabanks, 2000). In the Black Hills, older records of this species were noted (Pettingill and Whitney 1965).

Distribution: This flycatcher species breeds from western and central Alaska to southern Yukon to northern Baja, California, Arizona, New Mexico, western Texas, Central Saskatchewan, central Minnesota, Massachusetts and south to Tennessee and North Carolina. The olive-sided flycatcher migrates in the winter to the mountains of South America (Andes) and southern Mexico and southeastern Brazil (Altman and Sallabanks, 2000). A large decline in this species population levels (-70%) has occurred from 1966-1999 is mostly attributed to habitat changes in the breeding ranges and/or in migration and wintering areas. This species has not been documented recently in the Black Hills of South Dakota (Peterson 1993).

Project Review: Potential habitat does not exist for this species in the Fanny Project Area (wooded riparian areas). This species has never been documented in the Fanny Project Area.

Analysis of Effects:

Direct: None anticipated.
Indirect: None anticipated.
Cumulative: None anticipated.

Determination: The proposed action and its alternatives will have no impact on the olive-sided flycatcher.

Rational For Determination: Although a specimen was collected in 1948, this species is considered a casual visitor to the Black Hills and somewhat transient in nature. This species has not been recently documented in the Black Hills or South Dakota (Peterson 1993, Peterson 1995). The proposed action will not impact this species or its habitat.

Purple Martin (*Progne subis*)

Habitat: The purple martin is usually found in open and partially open habit, frequently near water or around grasslands, shrub lands, hardwoods and conifer woodlands. This species is a secondary cavity nester and requires a standing snag or hollow tree previously excavated by a primary cavity nester. The purple martin catches insects in the air, often forages over fields, water and marshes but occasionally forages by walking along the ground. The purple martin's prey base consists mostly of ants, beetles, grasshoppers, and dragonflies. The purple martin is a colonial breeder and sometimes uses abandoned woodpecker cavities.

Distribution: Breeding range is west of Cascades and Sierra Nevada from southwestern British Columbia to northwestern Mexico and Arizona, east of Rocky Mountains from British Columbia east through northern Minnesota and south to Florida. This species usually migrates during the winter along the coasts and into South America. In the Black Hills, this species was historically abundant (Grinnell, 1874) and was last documented here in 1909 (Pettingill and Whitney, 1965). There are purple martin noted in the South Dakota Breeding Bird Atlas but these are found in the eastern part of the state and are considered transient in the Black Hills (Peterson, 1995).

Analysis of Effects:

Direct: None anticipated.
Indirect: None anticipated.
Cumulative: None anticipated.

Determination: The proposed action and its alternatives will have no impact on the purple martin.

Rational For Determination: Although this species was historically abundant in the Black Hills, there has been no recent documentation of breeding populations in the Black Hills (Peterson 1993, Peterson 1995). The proposed action will not impact this species or its habitat.

Pygmy Nuthatch (*Sitta pygmaea*)

Habitat: This primary cavity nester is generally associated with large snags in pine forests: prefers open, park-like forest, especially among ponderosa pines in the lower coniferous zone. The nuthatch feeds on insects and conifer seeds (DeGraaf et. al. 1991), and requires large diameter snags (> 17" DBH) for excavation of nest sites (Raphael and White 1984). This species sometimes is communal in nature, especially in winter.

Distribution: The pygmy nuthatches range is from southern interior British Columbia, northern Idaho, western South Dakota, south to Mexico and western Texas. In the Black Hills, this species is an uncommon-rare, permanent resident and thought to generally prefer the southern and lower elevations of the hills (Luce et. al. 1997, SDOU 1991). Regional population trend is slightly upward (BBS). Local Population trend is not available due to it's rarity (RMBO, 2001).

Project Review: Potential suitable habitat is present in the project area in respect to large dead trees, snags created by mountain pine beetle activity and late succession stands. There are no records for this species in the Fanny Project Area.

Analysis of Effects:

Direct: Potential habitat for this species will be decreased by the proposed action. Removal of large diameter (trees > 9"DBH) will reduce future nesting habitat created by insects and disease in the proposed cutting areas. Removal of standing dead (hazard trees) will reduce potential nesting sites, and removal of logging slash will decrease prey base.
Indirect: Chemical treatment of noxious weeds and for insects and disease may impact prey species.
Cumulative: A large area of potentially suitable "source" (snags) habitat for the pygmy nuthatch species has been created by the Jasper Fire, Rodger Shack and Elk Mountain wildfires. However, recent surveys (RMBO, 2001) have not detected an increase in observations. This increase in snags may not benefit this species as much as other cavity nesters as they are not known to favor these large, open burned areas.

Determination: All action alternatives may adversely impact individuals, but are not likely to result in a loss of species viability on the Planning Area, nor cause a trend to federal listing or a loss of species viability range-wide.

Rational for Determination: Removal of commercial wood (>9" DBH green trees) will negatively impact this species habitat in the treated areas. In addition, sanitization of trees stands to reduce insect related tree mortality will limit the amount of foraging substrate and potential nesting sites for this species. However, the Forest Plan Phase I Amendment increases the amount of snags required on the landscape along with retaining large diameter green trees for future snag levels. These revised snag standards should be adequate to provide minimum habitat needs for this species. In addition, increased fire and insect/disease activity has increase suitable habitat in the Planning Area. The proposed action may limit this species' use of treated areas but not affect viability throughout the Planning Area.

Golden-Crowned Kinglet (*Regulus satrapa*)

Habitat: The golden-crowned kinglet prefers larger blocks of coniferous forest and woodland, especially spruce. The nest is typically in evergreens, most often in the crown of the trees. The golden-crowned kinglet feeds primarily on insects, tree sap and sometimes fruit and seeds. Young are usually fed small arthropods and sometime small snails. This species is susceptible to forest thinning, logging activities, spruce die-off, wildfires and extreme winters (Natureserve 2001).

Distribution: The golden-crowned kinglet breeding range is from southern Alaska to south to central California, to southern Arizona, east to Tennessee and north to Maryland and Maine. Also, found in Mexico and disjunct populations in South Dakota, Illinois and Indiana. Winter migration is to southern part of breeding range to southwestern Guatemala, central Tamaulipas, Gulf Coast and Florida (AOU 1998). In the Black Hills, this species is an uncommon resident (Luce et. al. and SDOU 2001), and distribution seems strongly tied to the occurrence of white spruce (RMBO, 2001). However, during the winter months in the Black Hills, this species is occasionally observed foraging with other species such as chickadees and brown creepers in the lower elevations in ponderosa pine, including the Fanny Project Area (District Data). Regional population data indicate a stable trend but local population data shows variation and these could be at least partly due to winter weather conditions.

Project Review: Potential suitable (winter) habitat is present in the project area. This species has been recorded within the Fanny project Area (District records). Mature pine stands with heavy under-story regeneration are also used by this species as wintering habitat. However, breeding habitat (spruce) is not present in the Fanny Project Area.

Analysis of Effects:

Direct: Loss and fragmentation of habitat due to harvest activities, thinning, road reconstruction and timber stand sanitation activities may impact this species negatively either through removal of dead trees, canopy cover and changes in microclimate around nesting or wintering areas.
Indirect: Fence line construction, fuel breaks, and chemical treatment for insects and weeds could impact this species negatively.
Cumulative: Loss of habitat due to timber harvest, large wildfires, insect and disease outbreaks, storm events, and private land development will continue to decrease the amount of this species habitat on the Planning Area.

Determination: All action alternatives may adversely impact individuals, but are not likely to result in a loss of species viability on the Planning Area, nor cause a trend to federal listing or a loss of species viability range-wide.

Rational for Determination: Breeding habitat (spruce) will not be affected by this proposal since none is present. However, suitable wintering habitat may be reduced through the actions in the preferred alternative. Recent population trend is upward for this species in the Black Hills but may be due to winter weather conditions (warmer).

Loggerhead Shrike (*Lanis ludovicianus*)

Habitat: The loggerhead shrike inhabits open, brushy areas with a low-density crown cover of scattered shrubs or small trees with lookout perches suitable for detecting and securing prey. It may range altitudinal from agricultural lands on the prairies to montane meadows, nesting sagebrush areas, desert scrub, pinyon-juniper woodlands, woodland edges, open country interspersed with improved pastures and grassland. Nests are located in a variety of trees and shrubs with stable supporting branches and overhanging cover. Prey items include large insects such as grasshoppers, crickets, beetles, and caterpillars, but also on a variety of other insects, small mammals, birds and reptiles (DeGraaf et al. 1991).

Distribution: The loggerhead shrike breeds from Canada to Mexico and is widespread throughout the United States. This species winters in the southern half of the United States. In the Black Hills, this species is considered rare (Luce et. al.1997, SDOU 1991). This species is found in scattered locations in suitable habitat throughout the forest (Peterson 1995, Luce et. al.1997). Regional population trend are stable (BBS, TNC 1995). However, there have been documented declines in the eastern portion of this species range. Declines have been attributed to the consumption of contaminated prey (from chemicals), predation, loss of nesting sites, and loss of pastureland feeding habitat (Finch 1992).

Project Review: Suitable habitat is not thought to be present in the Fanny Project Area. There are very limited hardwoods and no riparian habitat. However, prey for the shrike (insects, small mammals, birds, reptiles) is expected to increase from the action alternatives due to prescribed treatments that encourage hardwoods and restore upland meadow habitat. In addition, recent wildfires that have opened large areas to increased production of grass/forb, shrub and aspen.

Analysis of Effects:

Direct: None anticipated.

Indirect: Herbicide use to control noxious weeds in the area may affect shrub growth and contaminate some prey base.

Cumulative: Livestock grazing in hardwoods and riparian areas that impact shrub and willow growth, and chemical herbicides that contaminated prey or reduce vegetative diversity may negatively impact the loggerhead shrike where they occur across the Planning Area. Within the Fanny Project Area no effects are anticipated.

Determination: The proposed action will have no impact on the loggerhead shrike.

Rational for Determination: While hardwoods and riparian areas are predicted to increase and improve in condition on the Planning Area as a of the Forest Plan Phase I Amendment standards and guidelines the Fanny Project Area does not contain these habitat types or conditions. The proposed action will not adversely impact this species. Although, insect and small mammal (prey

species) populations are likely to increase in this area loggerhead shrikes are not expected to migrate into this area.

Fox Sparrow (*Passerella iliaca*)

Habitat: The fox sparrow prefers dense thickets in coniferous or mixed woodlands, chaparral, parks, and gardens, woodland bottomlands along rivers and creeks. The fox sparrow requires dense brushy cover during the nesting season for nesting and foraging (smartweed, ragweed). They also eat berries such as blueberries, elderberries, grapes and other fruit and occasionally invertebrates.

Distribution: The fox sparrow's breeding range is western and northern North America, south to Colorado Rockies and western mountains to southern California. Non-breeding range is southern Canada, Alaska through the pacific states through New Mexico, Kansas, Iowa, and Wisconsin and Florida. This species is a long distant migrant and considered a migratory transient in South Dakota. In the Black Hills, there is a fall banding record near Sheridan Lake (Pettigill and Whitney 1965).

Analysis of Effects:

Direct: None anticipated.
Indirect: None anticipated.
Cumulative: None anticipated.

Determination: The proposed action alternatives will have no impact on the fox sparrow.

Rational For Determination: There has been no recent documentation of breeding populations in the Black Hills (Peterson 1993, Peterson 1995). The proposed action will not impact this species or habitat.

Reptiles and Amphibian Species

Tiger Salamander (*Ambystoma tigrinum*)

Habitat: Habitat for this species is varied, including arid sagebrush plains, pine barrens, mountain forest, and meadows where ground is easily burrowed. This species lives beneath debris near water, in crayfish or mammal burrows. This species is often found at night after heavy rains, especially during the breeding season. They are voracious consumers of earthworms, large insects, small mice and amphibians (Behler and King 1979). This species needs ponds, temporary pools or backwater streams to breed and a moist habitat to disperse. This species is vulnerable to riparian contamination (change in pH), loss of habitat and breeding site disturbance (Baxter & Stone 1985, Livo, 1995).

Distribution: This species is considered a habitat generalist and is widespread throughout North America. In the Black Hills, this species is moderately common to uncommon resident (Peterson 1974, Baxter and Stone 1985, Fisher et. al. 1999, Luce et. al. 1997) and is known in all counties. There is no local population trend data available. Habitat appears to be in slight decline (District Data) but the suspected cause is drought conditions over the past few years.

Project Review: Suitable habitat exists in the Fanny Project Area. Surveys conducted in 2002 reconfirmed breeding at specific spring locations.

Analysis of Effects:

Direct: Potential habitat disturbance or loss may occur from excessive livestock grazing, temporary road construction, road reconstruction and sedimentation in riparian areas or filling of created reservoirs. Removal of large diameter (>10" DBH) dead wood in the proposed action would decrease the amount of downed wood available for habitat for this species in the long term in the treated areas. Reductions in canopy density may cause surface temperature and soil moisture (drying) changes that do not favor this species or it's prey. Harvest equipment and other related activity at these spring sites would likely have adverse affects, and more so in the spring-summer months.

Indirect: Herbicide treatment of noxious weeds may potentially affect water quality and plant species diversity.

Cumulative: Excessive livestock grazing at breeding sites (springs/water catchments) will negatively impact this species. Removal of down woody debris, and changes in soil moisture due to timber harvesting may limit distribution of this species within the Fanny Project Area and across the Planning Area.

Determination: All action alternatives may adversely impact individuals but are not likely to result in a loss of species viability on the Planning Area, nor cause a trend to federal listing or a loss of species viability range-wide.

Rational for Determination: The Forest Plan Phase I Amendment has Standards on management in riparian areas, streams, ponds, springs, and other wet areas. Also, increased snag and down woody standards will help improved habitat for this species as well. While habitat trend forest wide appears to be stable, local habitat conditions appear to be in slight decline (District Data). Drought conditions over the past few years are the suspected cause. Recommended mitigation measures (spring site buffers) for all action alternatives should ensure adequate to protect this species from potential adverse effects.

Black Hills Red-bellied Snake (*Storeria occipitomaculata*)

Habitat: This subspecies occurs in moist woodlands with adequate cover of rocks, logs, tree bark or leaf litter, dry wooded habitat and human habitations. This snake feeds on slugs, earthworms, and soft-bodied insects.

Distribution: This subspecies is restricted to the Black Hills of South Dakota and Wyoming. In the Black Hills, this species is endemic, uncommon (limited survey data) and have been documented in all counties (Baxter and Stone 1985, Peterson, 1974, Thompson and Backlund). There is no local population trend data available. Habitat appears to be stable (SDNHD). Not much is known on distribution, abundance and dispersal due to secretive behaviors. This species may be susceptible to predation and human caused mortality (road kills), and large, high intensity wildfires.

Project Review: Suitable habitat may exist in the Fanny Project Area, although there are no known records of this species occurring in this area.

Analysis of Effects:

Direct: Potential habitat disturbance or loss may occur from temporary road construction, and reconstruction. Removal of large diameter (>10" DBH) dead wood in the proposed action would decrease the amount of downed wood available for habitat for this species in the long term in the treated areas.

Indirect: Herbicide treatment of noxious weeds may potentially affect water quality and plant species diversity.
Cumulative: Livestock overgrazing around springs and other wet areas will negatively impact this species. Timber harvesting, road construction where this species is present (den sites) may adversely alter site conditions (warming, drying, den disturbance).

Determination: All action alternatives may adversely impact individuals but are not likely to result in a loss of species viability on the Planning Area, nor cause a trend to federal listing or a loss of species viability range-wide.

Rational for Determination: The Forest Plan Phase I Amendment has placed additional Standards on management in riparian areas, streams, ponds, springs and other wet areas. Standard 3116 addresses avoid creating barriers for this species. While the habitat trend for the Black Hills red-bellied snake appears stable across the Planning Area it has been negatively affected by recent large wildfires. Recommended mitigation measures should be adequate to protect this species from any additional effects from the proposed action if found to be present in the Fanny Project Area.

Pale Milk Snake (*Lampropeltis triangulum multistrata*)

Habitat: Habitat for the milk snake is considered diverse and includes semi-arid to damp coastal bottomland, Rocky Mountain and tropical hardwood forest, pine forest, deciduous woodland high plains and prairies. This species is usually found under rotting logs, stumps, or rocks. This species is secretive, not usually found in the open except at night. Milk snakes feed on small rodents, birds, lizards, and other snakes (Behler and King 1979).

Distribution: This subspecies is restricted to Nebraska, South Dakota, Wyoming and Montana. In the Black Hills, this species is rare (survey data limited) but have been documented in all counties at lower elevations (Fertig and Beauvais 1999, Thompson and Backlund, Peterson 1974, Froiland 1990, Smith 1994, Smith 1996). No are no District records of this species. Local population trend data is not available. Not much is known on distribution, abundance and dispersal due to secretive and nocturnal behaviors.

Project Review: Potential suitable habitat it not thought to exist in the Fanny Project Area.

Analysis of Effects:
Direct: None anticipated.
Indirect: None anticipated.
Cumulative: None anticipated.

Determination: The proposed action in expected to have no adverse impact on this species.

Rational for Determination: There have been no documented observations of this species near the Fanny Project Area. Due to the dry pine conditions, and lack of any observation data habitat for this species is not suspected to be present in the Fanny Project Area. However, scientific experts interviewed during the Phase I process stated that harvest actions that improved hardwoods and maintain large diameter (rotting) logs on the forest floor would likely be beneficial for this species. While both action alternatives propose hardwood release (remove conifers) in all existing small aspen clones is very limited. There is no riparian habitat present. Forest Standards would maintain a down woody debris component.

Northern Leopard Frog (*Rana pipiens*)

Habitat: This species can be found from desert to mountain meadow up to 10,000 feet. Preferred habitat includes cattail marshes, beaver ponds, and other permanent water sources with aquatic vegetation with good water quality. Breeding habitat is limited to permanent water sources greater than 6 inches deep (Baxter and Stone 1985, Fisher et. al. 1999 and Peterson, 1974).

Distribution: This species is widespread throughout North America from New England to Washington and Oregon mostly north of the 40th parallel (Conant 1986). In the Black Hills, this species is moderately common in suitable habitat. Local population trend and habitat appears to be stable (District Data). This species is vulnerable to habitat alteration/loss, susceptible to overgrazing, predation, low water quality and quantity (i.e. desiccation) (Baxter and Stone 1985, Fisher et. al 1999, Peterson 1974).

Project Review: Suitable habitat exists and this species is present in the Fanny Project Area. Breeding occurs at select springs and catchments. Surveys conducted in 2002 reconfirmed presence but not reproduction.

Analysis of Effects:

Direct: Potential habitat disturbance or loss may occur from excessive livestock grazing, temporary road construction, road reconstruction and sedimentation in riparian areas. Removal of large diameter (>10" DBH) dead wood in the proposed action would decrease the amount of downed wood available for habitat for this species in the long term in the treated areas. Reductions in canopy density may cause surface temperature and soil moisture (drying) changes that would not favor this species. Harvest equipment and other related activity at these spring sites could likely have adverse affects, more so during the spring-summer breeding season.

Indirect: Herbicide treatment of noxious weeds may potentially affect water quality and plant species diversity.

Cumulative: Excessive livestock grazing at breeding sites (springs/catchments) will negatively impact this species. Removal of down woody debris, changes in soil moisture may limit distribution of this species within the Fanny Project Area and across the Planning Area.

Determination: All action alternatives may adversely impact individuals but are not likely to result in a loss of species viability on the Planning Area, nor cause a trend to federal listing or a loss of species viability range-wide.

Rational for Determination: The Forest Plan Phase I Amendment has Standards on management in riparian areas, streams, ponds, springs, and other wet areas. Also, increased snag and down woody standards will help improved habitat for this species as well. While habitat trend forest wide appears to be stable, local habitat conditions and breeding success may be in slight decline (District Data). Drought conditions over the past few years are the suspected cause. Recommended mitigation measures (spring site buffers) for all action alternatives should be adequate to protect this species from additional adverse effects.

Animal Species

Dwarf Shrew (*Sorex nanus*)

Habitat: The dwarf shrew is found in various habitats including rocky areas in alpine tundra and partly into sub-alpine conifer types of rocky slopes (e.g. ponderosa pine, sedge marsh, sub-alpine meadow, dry slopes, arid short-grass prairie, dry stubble fields and pinyon-juniper woodland. This species requires fallen log/debris and soil that is easily excavated for burrows. This species feeds primarily on insects, spiders, and other small invertebrates (worms, mollusks, centipedes). The dwarf shrew may also consume vegetable matter as well as some small vertebrates (salamanders) (Natureserve, 2001).

Distribution: Locally from Montana and South Dakota to Arizona and New Mexico: not currently known sites, but this may be the result of difficulty in capturing the species; recent pitfall trapping has substantially increased the number of known sites. In South Dakota, this species is found around but not within the Black Hills (Higgins et. al.). Population trend is unknown.

Project Review: Potential habitat for this species is not present in the Fanny Project Area. However, no dwarf shrews have been found breeding in the Black Hills (Higgins et. al. 2000).

Analysis of Effects:

Direct: None anticipated
Indirect: None anticipated.
Cumulative: None anticipated.

Determination: The proposed action and its alternatives will have no impact on the dwarf shrew.

Rational For Determination: There has been no recent documentation of breeding populations in the Black Hills (Peterson 1993, Peterson 1995). The proposed action will not impact this species or its habitat.

American Marten (*Martes americana*)

Habitat: The American marten uses dense deciduous, mixed, or especially coniferous upland and lowland forests with rocky areas. In the central Rockies, this species is closely associated in winter with old-growth forest. When inactive, this species occupies a hole in dead or live tree or abandoned squirrel nest, conifer crown, rock pile, burrow, snow cavity. During the winter, the marten uses mainly sub-nivean sites associated with course woody debris, or in some cases rocky outcrops. Young are born in a den, usually a hollow tree. The American marten diet consists mainly of small mammals, birds, insects, and carrion. Berries and other vegetation foods are eaten in season. This species forages mostly on the ground and in trees.

Distribution: The American marten have a large range in northern North America south to the northeastern U.S. and the mountains of the west. The American martens range has dwindled due to timber harvest and excessive harvest of pelts, mostly in the southern part of its range. Natural reestablishment and reintroduction programs, along with trapping restrictions have improved this species range, but adequate population data is not available. In South Dakota, this species was reintroduced to the Black Hills approximately 20 years ago. The marten population appears to be increasing gradually and is considered secure (SDGF&P Data).

Project Review: There are no spruce or pine/spruce stands in the Fanny Project Area. Potential habitat is not present. Track plate boxes were placed during the winter of 1999-2000 and the fall-winter of 2001-2002 in spruce/pine sites seven (7) miles north of the Fanny Project Area. These surveys failed to detect marten.

Analysis of Effects:

Direct: None anticipated.
Indirect: None anticipated
Cumulative: None anticipated.

Determination: The proposed alternatives would have no impact on the marten.

Rational for Determination: Suitable habitat is not present in the Fanny Project Area. Forest Plan Phase I Amendment Standards protect suitable habitat, where it occurs.

Black-footed Ferret (*Mustela nigripes*)

Habitat: This species habitat corresponds with that of the prairie dog species particularly the black-tailed prairie dog. Black-footed ferrets modify prairie dog burrows for den sites and burrow in search of prey. This species is almost entirely dependent on prairie dogs for food; other diet items may include mice, ground squirrels and carrion. They cache food for later consumption. Major threats to the black-footed ferret include loss of prairie dog habitat, disease impacts, and predators, such as coyotes, great horned owls, golden eagles, fox and badgers.

Distribution: Historical range corresponds with historical range of the black-tailed prairie dog. Current distribution is limited in the United States. In South Dakota, this species was re-introduced in the Conata Basin/Badlands site in eastern Pennington County in 1994. All counties in the Black Hills have historical breeding data for this species. Currently, the nearest prairie-dog town of a sufficient size is located on Thunder Basin National Grasslands in Weston County, Wyoming, over 10 miles south west of the project area. The United States Fish and Wildlife Service lists that for Custer County, South Dakota there is a 'possible' chance that ferrets could be present. However, the Fanny Project Area is without prairie dog towns so this is extremely unlikely. The last direct sighting of this species in the Black Hills area occurred in Wind Cave National Park in 1956 (Turner, 1974).

Project Review: Potential suitable habitat is not present in the Fanny Project Area because there is no suitable habitat for its prey species (black-tailed prairie dog).

Analysis of Effects:

Direct: None expected.

Indirect: None expected.

Cumulative: None expected.

Determination: This project proposal will have no impact on the black-footed ferret or it's critical habitat.

Rational for Determination: This species has historical records in all counties in the Black Hills but are closely tied to black-tailed prairie dog towns which area limited (Higgins et. al. 2000, USFWS 2000). At this time, there are no black-tailed prairie dog towns in the Fanny Project Area.

Black-tailed Prairie Dog (*Cynomys ludovicianus*)

Habitat: Prairie dogs live in ground burrows concentrated in "towns". This species prefers short grass and mixed grass prairies with soil conditions that allow burrowing. This species generally prefer disturbed sites, such as plowed, frequently mowed or heavily grazed areas (ease of visibility of predators). Once established, prairie dogs are able to maintain and expand their habitat (Higgins et. al. 2000). This species has been identified as a keystone species (other species are closely tied with this species as prey or the habitat that this species creates)

Distribution: This species is found in the Great Plains of Canada, United States to northern Mexico. Current range is considered a fraction of their historical range. In the Black Hills, this species is found along the perimeter and suitable rangeland habitat in Crook and Weston Counties in Wyoming and in Custer, Meade and Pennington Counties in South Dakota. Less than 100 acres of prairie dog towns have been documented in the Black Hills (approximately six sites known). The United States Fish and Wildlife Service recommends listing as threatened species (candidate species) because population trend is downward. No local population trend data is available. Most suitable habitat is located off National Forest land. This species is vulnerable to habitat loss from development, susceptible to predation, rodent poisoning, recreational shooting and competition for food.

Project Review: There are no black-tailed prairie dogs present in the Fanny Project Area. It is unlikely that prairie dogs would establish a colony in this area since the potential for suitable habitat is limited. There are no large expanses of upland meadows.

Analysis of Effects:

Direct: None expected.

Indirect: None expected.

Cumulative: None expected.

Determination: This project proposal will have no impact on the black-tailed prairie dog or it's habitat.

Rational for Determination: This species has historical records in all counties in the Black Hills, but are usually lower elevations where soil types allow burrowing and vegetative species (Higgins et. al. 2000, USFWS 2000). At this time, there are no black-tailed prairie dog towns in the Fanny Project Area.

Swift Fox *(Vulpes velox)*

Habitat: The swift fox typically inhabits short-grass or mid-grass prairies with open gentle rolling topography. Habitat components include loose soils for easy burrowing (dens) and low grass or shrub ground cover to allow distant viewing. They are opportunistic foragers and can cover long distances from dusk to dawn in search of jackrabbits, cottontails, prairie dogs, ground squirrels, mice, insects, birds, and carrion (Higgins, et.al. 2000).
Distribution: Current distribution of this species id from south-central Canada (reintroducted population) south through portions of Montana, Wyoming, South Dakota, Colorado, Nebraska, Kansas, Oklahoma, Texas, and New Mexico. The swift fox in South Dakota is concentration in the southwestern counties. Swift fox surveys conducted in 1999 on the Buffalo Gap National Grassland only found tracks in the Ardmore area (near the Nebraska state-line). Prairie dog poisoning has impacted the swift fox. Conversion of native prairies to agricultural crops and livestock grazing eliminated or reduce suitable swift fox habitat. Potential habitat in the Black

Hills is limited to the southern portion of the forest where there are some active prairie dog colonies.

Project Review: There are no black-tailed prairie dogs present in the Fanny Project Area. Potential habitat is not present. It is unlikely that there would be swift foxes in the Fanny Project Area.

Analysis of Effects:

Direct: None expected.

Indirect: None expected.

Cumulative: None expected.

Determination: This project proposal will have no impact on the swift fox or it's habitat.

Rational for Determination: This species has literature records for Custer County, but these are limited to the lower elevations where soil types allow burrowing and grassland vegetative species (Higgins et. al. 2000).

Townsend's Big-eared Bat (*Corynorhinus townsendii*)

Habitat: This bat inhabits shrub-steppe, forest edge, pinyon-juniper, and moist forest types. Usually roosts in caves or abandoned mines. Hibernacula and maternity roosts are usually caves, rock crevices, and buildings and occasionally mine shafts. Caves with high humidity, cool temperatures, and numerous crevices and fractures are preferred for roosting. This species usually roosts on more open rock surfaces where they are more susceptible to disturbance. Tree cavities may occasionally be used for daytime roosting. This species is active in the late evening and feeds mainly on small moths high in the forest canopy, occasionally gleaning insects from trees.

Distribution: The species range is throughout western North America south to central Mexico. In the Black Hills, this species is considered a uncommon resident and is known from Fall River, Custer, Pennington, Lawrence and Meade counties in South Dakota and Crook County in Wyoming (Tigner 1998 *Draft report*). This species is considered sedentary (tied to roosting sites). Population trend is estimated downward (Tigner and Aney 1994). Factors that affect this species are human disturbance of roosting and hibernation sites, low reproductive rate and habitat loss. Disturbance by humans, especially in hibernacula and maternity roosts, can be a threat to survival of these animals (Barbour and Davis 1969, Higgins et. al. 2000).

Project Review: Suitable foraging habitat is present in the Fanny Project Area. There are no known caves or abandoned mine adits in the Fanny Project Area, there are numerous cliff-face crevices and fissures.

Analysis of Effects:

Direct: Loss of snags by the proposed action may reduce potential daytime roost habitat. Heavy equipment, road construction could potentially remove rock outcrops.
Indirect: Vegetation treatment near rock faces could potentially change the microhabitats. Pesticide/herbicide treatment could potentially affect prey base. Any loss of small water catchments due to sedimentation will negatively impact this species
Cumulative: Roosting habitat (large snags, rock outcrops) could be impacted by active timber sales. Since there are no caves in the Fanny Project Area it is unlikely that action alternatives would contribute to adverse cumulative effects.

Determination: It is possible that action alternatives may adversely impact individuals, but this is not likely to result in a loss of species viability on the Planning Area, nor cause a trend to federal listing or a loss of species viability range-wide.

Rational for Determination: Large colonial maternity or hibernacula roost sites are not suspected to occur in the Fanny Project Area. However, the species is likely present since it has been detected during mist-net surveys conducted in this vicinity. Forest Plan Phase I Amendment Standards for snags and green tree replacement will benefit this species by maintaining potential snag roost habitat. Standard 3102 would protect all known bat roost sites. The proposed action may limit individuals use of treated areas but would not affect species viability throughout the Planning Area.

Fringed-tailed Myotis (*Myotis thysanodes pahasapensis*)

Habitat: This subspecies of fringe-tailed bat will roosts during summer day/night in caves, abandoned mines, and man-made structures. Tree cavities (snags) are also used and have been used for maternity roost sites. Hibernation roosts can be in caves, abandoned mines rock fissures and man-made structures. This species feeds mainly on flying beetles, moths and other flying insects high in the forest canopy and on or near the ground near thick or thorny vegetation. They may occasionally glean insects from leaves (Higgins, et.al. 2000, Barbour and Davis, 1969).

Distribution: This subspecies only occurs in the Black Hills and possibly northwest Nebraska. This species is considered a rare to uncommon year-round resident. Known locations are found in Lawrence, Meade, Pennington and Custer Counties of South Dakota and possibly Crook and Western Counties in Wyoming (Tigner, 1998 *Draft* Report, Luce et. al. 1997). Factors that affect this species are human disturbance of roosting and hibernation sites, low reproductive rate and habitat loss. Disturbance by humans, especially in hibernacula and maternity roosts, can be a threat to survival of these animals (Barbour and Davis 1969, Higgins et. al. 2000).

Project Review: Potentially suitable habitat is present in the Fanny Project Area.

Analysis of Effects:

Direct: Loss of dead and dying trees from timber harvest activities (hazard trees) in the action alternatives could remove potential roost habitat.

Indirect: Vegetation treatments near roost sites could potentially change the microhabitats. Pesticide/herbicide treatment could potentially affect prey base. Loss of small water catchments due to sedimentation will negatively impact this species.

Cumulative: Increased insect activity and wildfire will create additional dead trees and grass/forb structural stage, which could increase prey base for this species. Roosting habitat (large snags) will continue to be lost to timber harvest activities, hazard tree removal in the Fanny Project Area and across the Planning Area.

Determination: All action alternatives have the potential to adversely impact individuals but are not likely to result in a loss of species viability on the Planning Area, nor cause a trend to federal listing or a loss of species viability range-wide.

Rational for Determination: Removal of commercial wood will result in fewer future roost sites. Snag loss is also likely to occur at some level depending on hazard. Prey species may increase due to increases in grass/forb structural stage. The proposed action will limit individuals use of treated areas but not affect viability throughout the Planning Area.

Spotted Bat (*Euderma maculatum*)

Habitat: This species of bat is found in a wide range of habitats in the western regions of the continent, but most often in scrub country and open desert. The day roosts often are situated on high cliffs. They utilized rock crevices. Foraging habitat often include riparian corridors and open forest patches. (Harvey, Altenbach, Best.1999).

Distribution: This species is not known to occur in the Black Hills. Currently, the closest record comes from western Wyoming where it is considered rare. (Tigner, 1998 *Draft* Report, Luce et. al. 1997).

Project Review: This species range has not been confirmed in the Black Hills region.

Analysis of Effects:

Direct: None are anticipated.
Indirect: None are anticipated.
Cumulative: None are anticipated.

Determination: The proposed alternatives would have no impact on the spotted bat.

Rational for Determination: This species is not suspected to occur in the Black Hills.

Invertebrates

Tawny Crescent Butterfly (*Phycoides batesii*)

Habitat: This species appears to be restricted to moist forest borders, particularly in riparian situations, and moist valley bottoms that border riparian woodlands. This species utilizes mostly asters, especially *Aster simplex* and leafy spurge as a host plants for a portion of their life cycle (Royer and Marrone 1992).

Distribution: This species originally ranged across southern Canada, southward to the mountains to Georgia and west from Ohio. The subspecies *Phycoides batesii batesii* has been extirpated from most of its range (eastern United States) The subspecies *Phycoides batesii lakota* population, which has been identified in our area, appears to be stable (Natureserve 2001). For the purposes of this document, all subspecies will be lumped as the main species, since the collapse of *Phycoides batesii batesii* is largely unexplained; there are no assurances that our regional subspecies *Phycoides batesii lakota* or other subspecies will not also decline (Natureserve 2001). This species is considered uncommon to rare throughout its distribution, in South Dakota occurs in native prairies in the Black Hills area. Distribution in North and South Dakota considered disjunct and populations assumed to be genetically isolated (Royer and Marrone 1992, Pyle 1998). The populations tend to be colonial and probably do not range widely. In the Black Hills, this species is known in Lawrence, Pennington, Meade and Custer counties in South Dakota and Crook and Weston counties in Wyoming with being rare to uncommon at known sites. Factors that affect this species are habitat loss (e.g. riparian areas), pesticide/herbicide application, especially gypsy moth spraying, and lost of host species (Aster spp.) (Royer and Marrone 1992, Moffat and McPhillips 1993).

Project Review: Potentially suitable (riparian/moist meadow) habitat does not likely occur in the Fanny Project Area.

Analysis of Effects:

Direct: None anticipated.

Indirect: While none are anticipated, herbicide treatment for noxious weeds may negatively impact host plants if present. However, documented preferred habitat is not present in the Fanny project Area.

Cumulative: Loss of this species host plants due to non-native species expansion and livestock over-grazing. Habitat loss due to development (subdivisions and conversion to blue grass lawns) and agriculture practices (crops and spraying of hay meadows) will continue to increase the cumulative negative impacts to this species. Despite this trend, habitat on public lands within the Planning Area appears to be stable at this time (Pers. Comm. Marrone). There is little likelihood of the Fanny proposed actions contributing to adverse cumulative effects.

Determination: The proposed action is expected to have no impact on the tawny crescent butterfly.

Rational for Determination: There is a lack of potential habitat. There have been no observational reports for this species in this area.

Regal Fritillary Butterfly (*Speyeria idalia*)

Habitat: This species appears to be restricted to intact native bluestem and wheatgrass/bluestem/needlegrass prairie, especially where violets provide a nectar source (Royer and Marrone 1992). However, it is also associated with riparian wet meadows. This species relies heavily on Viola spp. for host plants. Nectar plants may include milkweeds, thistles, prairie coneflower, and goldenrods.

Distribution: This species formerly ranged from New England to eastern Colorado and Wyoming; more recently from southwest North Dakota, southeast Montana, southwest South Dakota, eastern Wyoming, western Nebraska and Kansas. In the Black Hills, this species is known in Lawrence and Meade counties in South Dakota as transient or rare and only in suitable habitat. The Black Hills is on the very edge of this species range, which would account for sporadic sighting of this species. Suitable habitat is limited to larger native meadows in the Black Hills where native violets exist (Royer and Marrone 1992). This species is suspected to disperse to isolated mountain meadows. There is no local population trend data but national population trend is dramatically downward throughout its range due to loss of native prairie. Factors that may influence this species are overgrazing by livestock (affects host plants), and habitat destruction through development, agricultural practices (haying and cultivation), herbicide use, fire, and invasion of non-native/non-prairie plants. Some research on this species indicates that prescribed fire may cause extirpation of small isolated localized populations due short-term loss of host plants.

Project Review: Potentially suitable habitat may exist in or adjacent to the Fanny Project Area (post Jasper burn) but this species has not been documented in the Fanny Project Area.

Analysis of Effects:

Direct: None anticipated. While all alternatives could benefit this species by increasing native grass/forb seral stage in treated areas. It is unlikely that this species occurs in the Fanny Project Area. Where there is ground disturbance, and non-native grass/forbs are allowed to invade, a decrease in the native species will adversely impact this species.

Prescribed fire may cause a decline in this species since most regal fritillary populations are localized and fragmented and large scale prescribed fire may extirpate localized populations. However no prescribed burns are proposed in open meadow habitat with any Fanny Project Area alternative.
Indirect: Herbicide treatment for noxious weeds may negatively impact host plants for this species if present.
Cumulative: Loss of native prairie habitat, especially host plants due to agricultural practices, development, non-native species expansion and livestock over-grazing may negatively impact this species. However, none are anticipated as a result of the Fanny proposed action.

Determination: The proposed action is expected to have no impact on the Regal fritillary butterfly.

Rational for Determination: The lack of potential habitat is the primary rational. Surveys to detect this species in area of the Jasper wildfire continue.

Cooper's Rocky Mountainsnail (*Oreohelix strigosa cooperi*)

Habitat: Habitat is in moist environments especially spruce and spruce/pine mix, in lowland wooded areas, riparian toe slopes or talus slopes, generally with north to east exposure. This snail is loosely tied to calcareous soils, limestone outcrops and soil conditions (Frest and Johannes, 1993, District Data). This species forages on decayed deciduous tree leaves and degraded herbaceous vegetation. In suitable habitat, this snail can be found crawling on decaying woody debris.

Distribution: Distribution data for the United States and Canadian provinces is known to be incomplete. Current identified distribution is in the Black Hills of South Dakota and Wyoming. Populations are limited in the Black Hills to suitable habitat mostly in Spearfish Creek, upper reaches of Rapid Creek, Higgins Gulch, Prospect Gulch and Grand Canyon near Deadwood, SD. This species could also be found in other drainages in the northwest region of the Black Hills. A wider range is cited in Pilsbry (1939). Threats to this species are habitat loss due to logging, grazing (compaction), forest fires, road construction, or any other disturbance that will reduce the moist microclimate necessary for this species. This species is also negatively affected by herbicide and pesticide spraying (Natureserve 2001). No local population trend data is available, however, habitat trend in the Black Hills is declining due to removal of over story on suitable habitat. Most sites are not effectively protected.

Project Review: There is no spruce habitat in the Fanny Project Area, nor the favored habitat of moist calcareous soil. Cooper's rocky mountain-snails have not been found in the Fanny Project Area or surround vicinity (Frest 1993, 2001).

Analysis of Effects:
Direct: None anticipated.
Indirect: None anticipated.
Cumulative: None anticipated.
Determination: The proposed action will have no impact on the Cooper's rocky mountain-snail or suitable habitat.

Rational For Determination: Suitable habitat for this species does not occur in the Fanny Project Area, nor have contracted surveys found this species in or adjacent to the project area.

Striate Disk Snail (*Discus shimekii*)

Habitat: Habitat is in moist environments especially spruce and spruce/pine mix, in lowland wooded areas, riparian toe slopes or talus slopes, generally with north to east exposure. This snail is closely tied to calcareous soils, limestone outcrops and soil conditions (Frest and Johannes, 1993, District Data). This species forages on decayed deciduous tree leaves and degraded herbaceous vegetation. In suitable habitat, this snail can be found crawling on decaying woody debris.

Distribution: Distribution data for the United States and Canadian provinces is known to be incomplete. Current identified distribution is in nine states and two Canadian provinces. Populations are limited to 13 known sites from the northern and central Black Hills. This species could also be found in other drainages in the northwest region of the Black Hills. This species is locally abundant in very small colonies. Threats to this species are habitat loss due to logging, grazing (compaction), forest fires, road construction, or any other disturbance that will reduce the moist microclimate necessary for this species (desiccation). No local population trend data is available, however, habitat trend in the Black Hills is declining due to reduction of spruce/pine mixed stands in suitable habitat. Most sites are not protected.

Project Review: There is no spruce habitat in the Fanny Project Area, nor are there moist calcareous soils. Although one colony has been located on schist substrate, it is believed that this is an unusual occurrence for this species. The Fanny Project Area occurs over sandstone and limestone substrate (Hogback). Striate disc snails have not been found in or adjacent to the project area by contracted surveys (Frest 1993, 2001).

Analysis of Effects:

Direct: None anticipated.
Indirect: None anticipated.
Cumulative: None anticipated.

Determination: The proposed action will have no impact on the Striate disc snail or its habitat.

Rational For Determination: Suitable habitat for this species does not occur in the Fanny Project Area, nor has this species been found in the project area.

Plants (Flora)

Marsh or Bristly Muhly (*Muhlenbergia glomerata*)

Habitat: The species is widely described as being a facultative wetland species (FACW, FACW+) (Van Bruggen 1985; Fertig 1993; USDA NRCS 1999). However, Black Hills occurrences have been found in drier habitats, often adjacent to streams or in the bottom of draws that are likely subject to seasonal flooding. Habitats in the Black Hills range from the open, grassy wetland meadow to pine and spruce dominated open forest, usually

with a hardwood component; ledges and slopes along creeks; and open, grassy hardwood draw bottoms.

Distribution: This species is considered circumboreal with global populations considered secure. Marsh Muhly had been considered rare in the Black Hills with a few known locations in Lawrence and Pennington Counties in South Dakota and in Crook County, WY (District Data, WY NDD). However the habitat concept has been expanded with many more locations being found in the Black Hills in recent years. No local population trend data is available at this time. This species is vulnerable to livestock over-grazing, herbicide treatment for noxious weeds, non-native species expansion (competition) and ground disturbance. The effects of forest vegetation management and fire on this species have not been identified.

Project Review: Potential suitable habitat may exist in the Fanny Project Area. A survey for sensitive plants at spring sites failed to detect this species.

Analysis of Effects:

> Direct: Ground disturbance and harvest activities may affect localized populations in growth and vigor if this species is present.
> Indirect: Noxious weed spraying in suitable habitat may decrease species diversity in the area and may negatively impact localized populations.
> Cumulative: Since little is known about this species habitat in the Black Hills, it is difficult to determine cumulative effects. Livestock overgrazing of suitable habitat may limit the expansion of localized populations. Mining activity, road construction, indiscriminate herbicide treatment and evasive plant species may impact this species on the Planning Area.

Determination: This species has not been found in the Fanny Project Area. Potential habitat may exist since this species has been found to occur in a wider range of habitat conditions then previously thought. If present there is the potential to adversely impact individuals, but not likely to result in a loss of viability on the Planning Area, nor cause a trend to federal listing or a loss of species viability range-wide.

Rational for Determination: This species is globally secure across its range with the Black Hills populations at the southern edge of their range. Forest Plan standards and guidelines along with mitigation measure will protect known locations if detected and suitable habitat.

Northern Arnica (*Arnica lonchophylla*)

Habitat: Based on sensitive plant inventories this species is widespread across the Black Hills. Often associated with violets, it is found on moist, north/northwestern slopes often with spruce or birch habitat type, and generally on a sandy, or well-drained limestone substrate.

Distribution: This perennial herb is unevenly distributed from Newfoundland to British Columbia and south to northern Minnesota. Populations in the Big Horns (Wy) and the Black Hills are considered disjunct.

Project Review: Potential suitable habitat is not believed to be present in the Fanny Project Area, and surveys of the few 'moist' sites failed to detect this plant.

Analysis of Effects:

Direct: None anticipated, however the proposed action would open the forest canopy in treated areas reducing shade and moisture in the microclimates of ponderosa pine sites.
Indirect: None anticipated.
Cumulative: None anticipated. The effects of livestock grazing on this species are not known (USDA Forest Service 2000). Noxious weed invasions are a threat to the overall health and population viability of this species.

Determination: Based on what is known about this species it is unlikely that this species is present in the Fanny Project Area. All recorded observations for this species are located in the north and north central Black Hills, or in the vicinity of the Norbeck area. A no impact determination is made for this species for the Fanny Project.

Rational for Determination: All current literature and survey information presented leads to the conclusion that potential habitat for this species does not exist in the Fanny Project Area.

Other Black Hills R2 Sensitive Plant Species-

Woolgrass (*Scirpus cyperinus***)** Habitat: a wetland species found on creek margins and is emergent at the upstream end of beaver dams, usually associated with willow.

Autumn willow (*Salix serissima*)- Habitat: boggy meadows and fens.

Fox Tail sedge (*Carex alopecoidea*) – Habitat: wet meadows and willow/sedge communities.

Southern Maidenhair Fern (*Adiantum capillus-veneris),* **Giant Helleborine** (*Epipactis gigantea*)- Habitat: In northern latitudes, warm spring water riparian/wet communities appears to be a requirement.

Greater Bladder Sedge (*Carex intumescens*), **Long-stalk Sedge** (*Carex pedunculata*)-

Habitat: riparian, north facing slopes.

Autumn Coralroot (*Corallorhiza odontorhiza*) – Habitat: a single, confirmed occurrence in Lawrence County, SD in pine forest habitat in higher precipitation zone. Surveys of moist spring habitats failed to detect this plant.

Trailing Clubmoss (*Lycopodium complanatum*), **Treelike Clubmoss** (*Lycopodium dendroideum),*

Large Roundleaf Orchid (*Platanthera orbiculata*), **Great-spurred Violet** (*Viola selkirkii),* – Habitat: Shady, moist, spruce/birch forest type.

American Trail Plant (*Adenocaulon bicolor*), **Dwarf Scouring Rush** (*Equisetum scirpoides*)-Habitat: moist, shady birch/hazelnut, or spruce/hazelnut forest sites.

Bloodroot *(Sanguinaria canadensis*)- Habitat: deciduous draws with oak, birch, occasionally pine/spruce, rich in leaf litter and a loamy soil.

Project Review: These species are either not expected to occur, or potential suitable habitat for the above species is not present in the Fanny Project Area. There are no riparian, hazelnut, spruce, birch, or moist dense canopy mixed conifer forest conditions present.

Analysis of Effects:

Direct: None anticipated. Species not suspected to exist, or potential habitat is not present. Management activity would be confined to dry ponderosa pine stands. The proposed actions would open the forest canopy in treated stands and reduce shade and ground moisture potential in the microclimates of these ponderosa pine sites. Actions are proposed to remove pine canopy around the small aspen clones in an attempt to enhance clone vigor and expansion potential.
Indirect: None anticipated.
Cumulative: None anticipated

Determination: No Impacts are anticipated to the 15 plant species listed above as a result of the actions proposed for the Fanny Project Area (refer to Fanny EA).

Rational for Determination: Presence or potential habitat is not present. There is no evidence to suggest that any of these species listed above could occur within the Fanny Project Area.

BA/BE APPENDIX C

Mitigation and Monitoring

Required For The Fanny Project Analysis
Biological Assessment and Evaluation Determinations

Any modification of these mitigation measures is to be reviewed by an Interdisciplinary Team that includes a biologist or ecologist. A thorough documentation of the effects to the affected species by changes in mitigation measures will be placed in the Fanny Project file. The determination of effects to species must also be reviewed and amended if necessary to this document. Notification to the USFWS of the changes in the determinations for any Threatened, Endangered specie determinations of the original Biological Evaluation/Biological Assessment might be necessary to meet FSM 2670.

Mitigation Measures

Some of these may not apply to the Fanny Project Proposed Alternatives, as currently described. However, they are mentioned in case conditions changes or new information becomes available.

Follow all Forest Plan Standards and Guidelines for Threatened, Endangered and R-2 Sensitive species.

Contractual

Sensitive species located after contract or active coordination between permittee, contractor, or purchaser, and the Forest Service line officer, project administrator, and biologist will appropriately manage permit formation. Viable solutions need to be based on circumstances surrounding each new discovery and must consider the individual sensitive species needing protection, contractual obligations and costs, and mitigation measures available at the time of discovery (Standard 3115).

Snags/Down Woody Material

In associated watershed, retain the following minimum densities of hard snags, unless snags are a safety hazard. The hard snags need to be a minimum of 10" DBH and at least
Minimize the density of roads open to motorized vehicles. Close roads after timber harvest and other management activities, and maintain short time periods during which such roads are open to minimize removal of standing dead and large down woody debris especially along roads. Only remove hazard trees, which pose a safety hazard along roads, which will be open (seasonally or yearlong) to the public. Maintain dead and dying trees adjacent to roads that are closed to vehicular access (Standard 2302 and Guideline 2304). - *Since large snag, densities are low during this entry; any protection of standing snags will move snag densities toward Forest Plan Standards and Guidelines.*

Minimize the removal of large (>9" DBH) snags along fence lines and other structures (e.g. power lines). Clearing along these areas should be limited to trees that would cause immediate damage to these structures (Standard 2302). - *This will provide for nesting and foraging substrates for cavity dependent species and increase overall snag densities throughout the area.*

Unless deemed necessary for public safety and to meet Forest Plan Standards, maintain all large diameter dead and dying trees > 10" DBH where ever possible to provide primary and secondary cavity dependent species habitat. – *This will provide foraging and nesting habitat for sensitive species.*

Create hard snags from large diameter green trees, where snag densities drop below 1.5 per acre average (watershed basis) using the best available method to achieve hard snags. Created snags should be clumped with other large diameter green trees and naturally, occurring snags and clumps scattered across the watershed (Guideline 2303). Trees chosen for snag creation should be from the largest diameter class available with a large mature crown and many branches. – *This will provide additional foraging and nesting habitat for sensitive species if the area is deficient in large diameter snags.*
Retain all existing snags in harvest units post sale, especially those greater than 10" DBH, unless they are determined a safety hazard. All such snags should be designated as leave trees prior to treatment. Snags determined to be a safety hazard should be felled and left in place. Existing snags will be protected during prescribed burning where feasibility and safety permits (Guideline 2305). – *This will provide all diameters of snags for sensitive species use.*

On conifer forested sites maintain the following:

- In ponderosa pine sites, maintain large course debris on average at least 50 linear feet per acre and a minimum diameter of 10" DBH (Standard 2308).
- In Spruce sites, maintain large course debris of 8 logs per acre, at least 10" DBH and a minimum length of 10 feet and 2 logs per acre, at least 20" DBH and a minimum length of 10 feet (Standards 2308). - *Large course debris will provide for longer term nutrient recycling and provide habitat for American marten, bird species and small mammal habitat.*

Slash/small mammal habitat
Limit the amount of whole tree logging to provide slash and woody debris over the watershed unless slash creates a safety hazard, fire protection hazard or unacceptable visual problem near developed recreation areas (Guideline 2307) - *Slash will provide for longer term nutrient recycling and provide habitat for bird species and small mammal habitat.*

Retain slash piles >10 feet in diameter will be retained on edges of pre-commercial thinning units at a rate of 1 or 2 per acre unless determined to be a fire/fuels hazard. Wherever feasible, locate these piles near forest/opening edges. – *Small slash piles provide habitat for various prey species.*

Goshawk
Prior to removal of trees in suitable goshawk habitat the following must be applied:

- A goshawk nest survey must be conducted. If the survey identifies a previously unknown active nest, the project analysis will determine where protected acreages will be located.
- If the project includes a historically active nest or replacement stands associated with a historically active nest this area will be excluded from the project.
- If a historically active territory occurs within ½ mile of the project, the project analysis will determine whether some of the protected acreage should be treated (Standard 3108).
-

Any active raptor nest discovered during sale layout, sale operations, or post sale treatments will be reported to the District Wildlife Biologist for evaluation. Modifications to Forest Service contracts, and or mitigation measures such as seasonal or other restrictions (e.g. March 1 – August 30) may be required to protect the nest (Guideline 3204). – *For raptor species other than northern goshawks, protection of nest and area surrounding nest stand, might provide the habitat*

necessary to complete breeding and provide suitable nesting habitat in the future especially to species more closely tied to forested habitats.

Springs/Seeps (wet areas)
To protect riparian microclimates for sensitive species, avoid disturbances (e.g. road building, trail building, skid trails), thinning and commercial harvest of a minimum of one tree length or 100' feet (whichever greater) adjacent to riparian (moist soil) communities (e.g. springs, seeps, chokecherry, etc.) (Standard 1304, 1306, and Guidelines** 3110-3212). Natural breaks in terrain can be used to delineate these riparian buffers.

Spring developments, water catchments and other water facilities (either reconstruction or construction) in moist soil conditions should be surveyed for sensitive species. Locate new water sites outside of hardwood communities (Guideline 2207) Mitigation measures are required to protect sensitive species habitat, especially for amphibian and reptile species (Standard 3104). – *Water diversions or changes in water flow may affect riparian and hardwood habitat components and microclimate of sensitive species habitat.*

Snails
Protect all identified colonies (Frest 1993, Frest 2001) of the following snail species (*Discus shimeki*; *Oreohelix strigosa cooperi, Vertigo arthuri*, *Vertigo paradoxa*, *Catinella gelida*, *Oreohelix strigosa n. subspecies* and *Oreohelix strigosa berryi* from adverse effects caused by vegetative management activities, livestock grazing, road maintenance/building activities, noxious weed treatments and prescribed fire (Guideline 3107).

Reptiles/Amphibians
Avoid creating barriers (i.e. new open roads) between red-bellied snake hibernacula and wetlands (Standard 3116).
Design activities so that they are not impacting the area directly around the spring sites that may be breeding sites. Designate a minimum 100' ft. buffer around springs or seeps (see Springs/Seeps).

Other Bird Species

Retain large blocks (> 30 acres in size) of older mature ponderosa pine habitats for the golden crowned kinglets, pygmy nuthatches, brown creeper. These blocks should not have a visible break in the canopy by power lines, fence lines, roads, trails, harvest treatments or fuel breaks. These areas could also be goshawk nest stands, thermal cover stands, potential thermal cover stands and late succession stands. – *Research has indicated that these sensitive bird species are area sensitive and very susceptible to habitat fragmentation. Breaks in the canopy could reduce the use of these blocks by these species.*

Butterfly
Prescribed fire used in native prairie habitat should have clear objectives developed to enhance and/or protect sensitive butterfly host and nectar species (Guideline 3105). - *Recent research has indicated that timing of prescribed fire may limit the return sensitive butterfly species host plants (short term) and have caused a decrease in butterfly population numbers. Target host plants would need to be evaluated in terms of effects from fire.*

Use of herbicides and pesticides in native prairie habitat, grasslands and meadows should be limited to the target areas (Guideline 4304). Other means of Integrated Pest Management should be considered to treat noxious weeds that do not involve the use of herbicides or pesticides (e.g. biological control agents) (Guideline 4302). *Loss of host plants and nectar sources due to herbicide treatment has been attributed to declines in sensitive butterfly species in other areas of their range.*

Where possible, locate slash piles that are scheduled for burning out of grasslands and native prairie to protect from invasion of non-native species and loss of habitat for butterfly species. **When seeding areas of disturbance (e.g. slash piles, roads, skid trails) use native species to the area or non-invasive short-lived annuals to allow natural restoration of local plant populations.** – *This will protect butterfly habitat (host and nectar species) from aggressive non-natives and noxious weed infestations.*

Bats

Provide a buffer of no disturbance surrounding within 500 feet of an opening of a natural cave (Standard 1401). In addition, avoid ground disturbance within 500 feet of mine workings identified as being used by bat species. These buffers should be adequate to protect the mine or cave formation and prevent additional disturbance to the entrance. Slash shall not be piled at the entrance of caves or mines. Close roads and/or trails to identified hibernacula and maternity roosts if not used for public access to arterial, collector and private land (Guidelines 3102 and 3208). – *This will protect the roof of the mine or cave from collapse due to the weight of equipment, provide microhabitat features around the opening of the cave to protect the cave's interior temperatures during critical times and decrease the amount of recreational activity in the mine or cave.*

Protect mines and caves from disturbance if located during harvest operations and provide bat maternity roost or hibernacula habitat (Standard 3207). - *New caves and mine resources may be discovered during layout of vegetative treatments.*

Protect and monitor known high use areas of bats including water sources and feeding sites. - *Fire, logging, public use and grazing are known to adversely affect bat species use of specialized habitats. Protection such as fencing water sources and gating known hibernacula/maternity, roosts have increased the use of these habitats.*

Any caves or mines discovered during sale layout, sale operations, or post sale layout will be reported to the District Wildlife Biologist and District Archaeologist for evaluation. If determined that it may be suitable for bat maternity or hibernation habitat, buffers will be established (maintained) to protect the microclimate of the site (Standard 3207). – *This will protect bat habitat and increase our knowledge about the species that use caves or mines.*

Ground Disturbance- Sensitive Plants

Seed areas where activities have removed the herbaceous vegetation (i.e. skid trails, temporary roads, slash piles).
Use only native (grass/forb) species- the exception is annual ryegrass (*Lolium multiflorum*) that can be included in the native seed mix to provide a non-persistent cover crop for erosion control. Refer to the approved species list when developing a seed mix.

The use of herbicides and pesticides in native prairie habitat, grasslands and meadows should be limited to the target areas (Guideline 4304). Other means of Integrated Pest Management should be considered to treat noxious weeds that do not involve the use of herbicides or pesticides (e.g. biological control agents) (Guideline 4302).

Monitoring:

Monitor the effectiveness of all mitigation measures (including Forest Plan Standards and Guidelines) during proposed action implementation **that are applied** for protection of sensitive species habitat.

Monitor snag densities and large green trees designated as replacement trees to determine if Forest Plan Standards and Guidelines have been met. Propose snag creation activities if necessary.

Monitor wet areas (springs/seeps/stock reservoirs) for use by amphibians, reptiles, and other sensitive species, plant or animal.

Monitor the goshawk (historic) nest and new PFA's for activity.

BA/BE APPENDIX D

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